

ECONOMIC STATESMANSHIP

THE GREAT INDUSTRIAL AND FINANCIAL
PROBLEMS ARISING FROM THE WAR

BY

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"THE GREAT PROBLEMS OF BRITISH STATESMANSHIP," "MODERN GERMANY,
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DEDICATED
TO THE MEMORY OF THE LATE
EARL GREY

PREFACE

NATIONAL economy is obviously a part, and a most important part, of practical statesmanship. In the following pages the great industrial and financial problems which have arisen owing to the War are discussed from the statesman's point of view. General principles may be popular among the well-meaning but ill-informed, and they may win the votes of the multitude, especially if they lend themselves to being converted into resounding and easily remembered catchwords. However, the success of a business policy depends not upon its attractiveness and its plausibility, but upon its soundness, upon exact information, upon facts. Therefore, the following pages are filled not with delusive generalities, but with documentary and statistical evidence, with authoritative pronouncements and data, which are rather inaccessible to most. The present book is a companion volume to *The Great Problems of British Statesmanship*, of which the second edition was recently published by Mr. John Murray.

It is dangerous to experiment upon the body politic. In matters economic prosaic experience is a safer guide than abstract speculation. The Americans have been extraordinarily successful in economic endeavour and in the art of Empire building. In a little more than a century they have reared the most powerful and the wealthiest State in the world on the broadest democratic basis. Invaluable lessons may be learned from the study of

American affairs. The feature of this book is that it analyses the causes of America's success and that it considers the great economic problems of the future in the light of American experience, so that England and the Empire may learn from America's example.

The present volume owes its origin to that great and good man, the late Earl Grey. Having attracted his attention by my advocacy of Imperial organisation and of an Anglo-American reunion, he induced me to spend six months in the United States and in Canada in order to study their political, social, and economic conditions. He furnished me with the best introductions, and I promised him to embody my impressions in a book. My knowledge of American affairs is largely due to Lord Grey's action. Had he been spared, I should have dedicated to him this volume, which, gratefully and sorrowfully, I now inscribe to his memory.

Although the bulk of the volume has previously appeared in the *Nineteenth Century and After* and the *Fortnightly Review*, this work is not a collection of disjointed essays. The original articles were written with a view to their subsequent publication in book form, and I would very sincerely thank the editors of the periodicals mentioned for allowing me to reprint my contributions.

The contents of this book are, for the convenience of readers, briefly summarised in the Introduction. A full Analytical Index at the end of the volume should facilitate its use as a work of reference.

J. ELLIS BARKER.

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ECONOMIC STATESMANSHIP

CHAPTER I INTRODUCTION

THE War has shown even to the blindest that military power and economic strength are exceedingly closely interwoven, that wars may be lost or won not only on the battlefield, but also in the school, the laboratory, the mine, the mill, and the factory. It follows that the policy of *laissez faire*, the policy of drift in economic matters, in which the security of the State is subordinated to the liberty of action of individuals who merely strive to benefit themselves, has become discredited. The policy of *laissez faire*, of individualism, is a policy which may be summed up in the phrase, "Everyone for himself." At last it has become clear even to the most narrow-minded individualists that nation-wide co-operation, the harmonised and ordered effort of all the citizens for the furtherance of the common good, is a more potent factor for ensuring the national welfare than unfettered competition, an internecine war of all against all, the *bellum omnium contra omnes* of Thomas Hobbes.

Not so very long ago the United Kingdom was by far the largest producer of iron and steel in the world, but during the last few decades her predominance in the iron and steel industry has disappeared. Great Britain allowed the German iron and steel industry to overtake the British industry. Those who pointed out that wars

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are made with iron and steel, that a war with Germany was almost inevitable, and who warned England, as I have unceasingly done ever since 1900, of the danger which she would run owing to the insufficient strength of her iron industry in case of a war with Germany, were told by the British advocates of the policy of *laissez faire*, of drift and neglect, that they were seeing ghosts. that there would be no war between England and Germany, that the relative decline of the British iron industry did not matter, that other British industries, such as cotton manufacturing and ship building, were exceedingly prosperous and were more profitable than iron making.

While England, oblivious of the fact that modern military power, and modern industrial power as well, is based upon iron, allowed her iron and steel industry to stagnate and to decline if compared with the iron industry in Germany and the United States, the German Government fostered the native iron industry with all means in its power. The result of energetic and planful development in Germany and of Governmental indifference and neglect in England was that at the outbreak of war Germany manufactured fully twice as much iron and steel as did Great Britain, that in iron and steel Germany was twice as strong as the United Kingdom. The vast strength of Germany which the War revealed was largely due to the gigantic power of that country's iron and steel industry. Had the United Kingdom, in 1914, possessed that overwhelming superiority in the iron and steel industries which she had in 1880, Germany would never have dared to challenge her.

In the modern world the military power of nations depends very largely on their industrial power. As modern industry is based upon the lavish use of coal and iron, only those nations can become industrially and

militarily powerful which possess, or control, ample stores of coal and of iron ore. The great coal and iron mines are, rightly considered, Nature's power-house and Nature's arsenal. Germany owes her great industrial prosperity, and her extraordinary military strength as well, largely to the fact that she had within her frontiers of 1914 very extensive iron mines, and by far the largest coal deposits in Europe. Her store of coal was in 1914 twice as large as that of the United Kingdom. All the most important coal fields and iron mines on the Continent of Europe are situated either in Germany or close to Germany's borders. After the outbreak of the War Germany seized the principal coal and iron mines of Belgium, France, Poland and Russia. Thus she obtained almost a monopoly in the production of coal and iron on the European Continent, and her leaders declared that Germany would retain the conquered coal and iron fields, the possession of which would make Germany absolutely predominant in Europe, both militarily and industrially, and would at the same time permanently disarm her opponents.

Taught by the bitter experience of war, the statesmen of the nations leagued against Germany, who had hitherto disregarded the vast importance of the economic factor as a source of political and military power, have begun to recognise the influence of coal and iron upon statesmanship, upon national greatness, strength and influence. Germany's principal coal and iron deposits are situated close to her frontiers of 1914. By far her largest iron mines are found in Lorraine, and nearly one-half of Germany's coal occurs in the Polish part of the Province of Silesia. The nation which dominates coal and iron may dominate the world. France and Italy are extraordinarily poor in coal. That fact alone explains their insufficient military and industrial strength. The settle-

ment at the peace should lead not only to territorial rearrangements in accordance with the principle of nationality, but to rearrangements on economic, and especially on mineralogical, grounds as well. The various aspects of the coal and iron problem, and the influence of coal and iron upon national wealth, strength, and population increase will be found discussed in the first chapter, "Coal, Iron—and the Domination of the World."

Many weak and short-sighted men, prompted by financial timorousness, have advocated "a peace by negotiation." They have told us that Great Britain was unable to continue the war because her trade, industries and finances would be ruined. They have told us that the people would be overwhelmed by the gigantic burden of the War Debt, which indeed threatens to approximate what is usually, but mistakenly, called the British National Wealth. In Chapter III., entitled "Britain's True Wealth and the Relative Unimportance of the War Debt," I have endeavoured to show that these fears are utterly unfounded. The British War Debt, however large it may be, will be limited in amount, while the wealth of the British people, as that of every vigorous and advancing nation, is susceptible to indefinite expansion, is unlimited, and is absolutely immeasurable. According to the best statistics available the so-called national wealth of the United Kingdom has grown tenfold during the last century, and it should grow considerably more than tenfold during the coming century, because the vast improvements made in all productive processes are bound to accelerate increasingly the accumulation of wealth. Her National Debt, however large it may be, will not impoverish Great Britain if she is victorious and if she retains her great wealth-creating resources. A complete victory will be financially far more advantageous than a mere stopgap peace.

The War has been fought for the British Empire, for the British race. It is, therefore, only fair that all parts of the Empire should share in bearing the burden of the War Debt in accordance with their economic strength. The potential wealth of the British Empire is absolutely unfathomable. During the last century the wealth of the United States has statistically grown about a hundred-fold. Hence the wealth of the British Empire should increase at a similar, and perhaps at a faster, rate during the coming century, provided the Dominions and Colonies be developed with American energy and ability, and in accordance with the American example. History teaches us that successful wars, however costly, do not impoverish, but enrich, nations possessed of energy and of great national resources. The Napoleonic War created the industrial greatness of the United Kingdom, and the terribly costly Civil War that of the United States. The present war should not prove an exception to the general rule.

Peace and ease beget sloth. Hard times beget energy and intelligent exertion. Increased taxation should act as a powerful spur to production, and should lead to a rapid increase of the national income and of the national wealth. In Chapters IV. and V. I have endeavoured to show that British Agricultural production can be vastly increased, and that British industrial production can easily be trebled, by introducing the best American industrial methods and the most powerful American machinery. Trebled production, which is perfectly feasible throughout the United Kingdom, should treble the income of masters and workers, should treble the comforts of the people, should treble the national income and the national wealth, and should more than treble the taxable capacity of the people. The Americanisation of the British industries has already begun, and it has

vastly benefited the national industries and the workers engaged in them.

The rapid development of the vast territories of the United States, which not long ago were a wilderness, is due chiefly to the energetic and far-sighted railway policy pursued by the American Government and people. The Great Republic has a far larger mileage of railways than has the whole of the British Empire, although the area of the British Empire is four times as great as that of the United States. Needless to say, the energetic development of the British Imperial railway system would greatly benefit not only the thinly populated territories across the sea, but would prove extremely advantageous to the British iron and steel industry, and to industry and trade in general throughout the Empire. The American railways are exceedingly efficient. They charge the lowest freight rates in the world, while the British railways are exceedingly inefficient, and are hampering the development of the national industries by their extraordinarily and scandalously high charges, which are the natural result of their inefficiency. The reform of the British and of the Imperial transport system in accordance with the example set by the American Railways, the activities of which are described in Chapter IV., should have the happiest results upon Motherland and Empire.

The intellectual and the material progress of nations depends partly on the inborn gifts of the people, partly, and very largely, on their acquired abilities and character, on their moral and practical education. The wonderful economic success of the United States is undoubtedly very largely due to their wonderful educational system. Education may be either autocratic or democratic. Hitherto British educationalists have endeavoured, and I think mistakenly, to shape British education upon the

model of autocratic Prussia. They may learn much from the democratic educational system of the United States, as I have endeavoured to show in Chapter VI. entitled "Education and Economic Success."

An industrial nation can flourish only if employers and employed, capital and labour, work together in cordial harmony. The future relations between the directors of the national industries and their workers are considered in Chapter VII., entitled "Labour and Capital after the War." The workers of a nation cannot be expected to do their best unless they are satisfied, and they cannot be expected to be satisfied unless they are prosperous. Underpaid labour is inefficient labour. Nothing is more wasteful on the part of an industrial nation than to allow its workers to live in poverty. Before the war millions of British workers, especially the unskilled and the agricultural labourers, lived not merely in poverty, but in want. Unfortunately, the British workers have hitherto, owing to socialist teachings, seen in the directors of industry and in the capitalists not a useful and necessary class, but an enemy, and their leaders have taught them the extraordinary doctrine that the workers can benefit themselves most by insisting upon the highest possible wage in exchange for the lowest possible production. Wishing "to make the work go round," British workers have systematically restricted their output, and have opposed the introduction of the most perfect labour-saving machinery, whereas the American workers have insisted upon large wages, but have willingly worked the most powerful and the most modern machinery at its full speed. The result has been that the output of the American workers has, as I have shown by exact and reliable figures, been three times as great as the output of the British workers engaged in identical callings. In other words, a single American

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worker has produced as large a quality of goods as three British workers employed in the corresponding industry.

The prosperity of the workers depends obviously not on the nominal amount of their wages, but on their purchasing power, for people cannot eat money. The prosperity of the masses is seen not by high money wages, but by high individual consumption. Money is merely a symbol, a token, which in itself is valueless. High consumption among the masses of a nation is, of course, impossible unless there is a correspondingly high national production. Low national production means poverty to the workers whatever the nominal amount of the money wages may be. The wages of the American workers were before the war about three times as high as were British wages, because the American workers produced three times as much as their British colleagues, and, producing three times as much as the British workers, they consumed approximately three times as much. Happily the British workers and the majority of their leaders have begun to recognise that in industrial matters they have mistaken the shadow for the substance, that they have followed a suicidal policy in restricting output, that prosperity among the workers requires that the goods produced in field, mine and factory should be plentiful, not scarce. Hitherto the British workers have injured the national industries, the capitalists, the middlemen, and especially themselves, by acting like greedy speculators, by creating an artificial scarcity of goods.

After the War Great Britain will presumably impose a Protective Tariff upon certain imports, giving a preference to the Dominions and Colonies and to her Allies. Those who oppose the reintroduction of a Protective Tariff base their attitude mainly upon certain assertions which, at first sight, seem very plausible. For instance, they maintain that Free Trade has given Great Britain

her great cotton industry, and that Protection would destroy it; that Free Trade has given England her maritime supremacy, while Protection has ruined the formerly so flourishing ship-building and ship-building industries of the United States, etc. The question how a Protective Tariff would affect the British cotton industry is discussed at length in Chapter VIII., "Would a Tariff harm Lancashire?" I have endeavoured to show in it that the fears of the Free Traders regarding the British cotton industry are unjustified. The effect of Protection and Free Trade upon shipping is considered in Chapter IX., "The British and American Merchant Marine." I have shown in it that the decline of the American ship-building industry was caused by the combined effect of the Civil War and of the advent of the iron ship at a time when England dominated the iron industry of the world, and when the American iron industry was quite insignificant. Moreover the wages of the American shipbuilders and of the American sailors were so much higher than the corresponding British wages that the American shipping trade could not compete with the British shipping trade, although the American shipping industry had been given free imports for all the materials, etc., required in the building and the fitting out of ships.

France has suffered terribly through the War. A prosperous and powerful France is necessary for the peace of the world, for there ought to be an adequate counterpoise to Germany on the Continent of Europe. Unfortunately the population of France has remained practically stationary for many decades, while that of Germany has rapidly increased. If the population of France should continue stagnating and that of Germany should continue progressing as quickly as it has done hitherto, France would sink to the place of a second-

rate or a third-rate Power within a few decades. In Chapter X., entitled "The Economic Position and Future of France," I have tried to show that the stagnation of the French population and the rapid increase of the population of Germany is largely, and probably principally, due to economic causes. The vast increase of the German people has taken place exclusively in the towns, and especially in the large towns, in the manufacturing centres. The population of the German agricultural districts has remained as stationary as that of France. The rapid increase of the German population was made possible by the equally rapid expansion of the German manufacturing industries, and the progress of the German manufacturing industries was due to Germany's vast wealth in coal. While Germany has a superabundance of excellent and cheap coal, France, like Italy, suffers from a scarcity of that indispensable mineral. Hence France, like Italy, was unable to develop those large manufacturing industries which create the prosperity of modern nations, and enable them to increase their population very greatly. A political and military balance between France and Germany can obviously most easily be created by transferring part of the superabundant mineral wealth possessed by Germany to France. Such a transfer might, and very likely would, lead to a slackening in the increase of the German race and to an expansion of the French race.

In Chapter XI., entitled "The Problem of Alsace-Lorraine," I have dealt very fully with the problem whether the population of these two provinces is French or German in character, and I have shown that, although it is undoubtedly German by race and language, it is French by choice and affection. Since 1871 approximately 700,000 people, half of them women, have emigrated from Alsace-Lorraine, and nearly all of them have

gone to France. If democracy means government in accordance with the will of the people, it is obvious that Alsace-Lorraine should be returned to France, because the people detest their German rulers, and wish to be reunited to France. Alsace-Lorraine possesses exceedingly valuable mineral resources, especially gigantic deposits of excellent iron ore. In addition, she has large quantities of potash and mineral oil. As iron is indispensable for warfare, a war of revenge on Germany's part could most easily be prevented by transferring the great iron deposits of Lorraine from Germany to France.

The economic position of Italy is one of very great difficulty. That beautiful country is equally poor in agricultural and in industrial resources. The development of agriculture is impeded by the fact that the larger part of the country consists of steep and barren mountains, and that the plains consist largely of fever-stricken swamps. The seas around Italy's coast contain little fish, and the country is exceedingly poor in minerals. Italy possesses only a trifling quantity of iron ore and practically no coal. As Italy is one of the most densely populated countries in the world—per square mile the population is almost as great as that of the United Kingdom—the Italians live in poverty. Their position will be a difficult one after the conclusion of peace. Lacking raw products of every kind, and being unable to produce in the country the food required, the Italians have made a living largely by producing for sale abroad luxuries which require much labour and little raw material. They have exported food luxuries such as oranges, lemons, olive oil, etc., and manufactured luxuries such as silks, artistic furniture, and so forth. After the war all nations will have to practise economy. They will naturally discourage the consumption of luxuries, and especially of imported luxuries, to the grave disadvantage of Italy.

Italy's poverty is due to the insufficiency of her natural resources. If, at the peace, she should find herself burdened with a huge national debt, and if, at the same time, those valuable expanding industries which she has created should be crippled, her sufferings would be terrible. Her people would have to emigrate in millions. The Allies possess obviously a superabundance of territory and of mineral resources. It seems only just that the United Powers should come to Italy's help by developing those resources, such as water powers, which she possesses, and by providing the country with an adequacy of agricultural soil and of the most necessary raw material, especially coal. The principal data relating to this problem will be found in Chapter XII., "The Economic Position and Future of Italy."

The cost of the war to the Allies may approximate £50,000,000,000, an amount which is three times as large as Germany's national wealth was estimated to be in 1914. It is frequently asserted that at the end of the war Germany will be ruined, and that she cannot pay for a tithe of the damage she has done. In Chapters XIII. and XIV., entitled "Can Germany pay an Indemnity?" I have shown that the value of Germany's coal, iron ore and potash alone should come to £237,678,000,000, a sum which is about fifteen times as large as the so-called national wealth of the United Kingdom was supposed to be at the outbreak of the war. Germany can pay for all the damage she has done in goods, especially in raw materials. After all, goods are more valuable than money. Money is only valuable because of the goods which it will buy. Germany has shown her appreciation of the value of raw materials by ruthlessly confiscating the coal, the iron ore, the petroleum, and the harvests of her opponents. She has thus created a precedent which she may live to regret.

CHAPTER II

COAL, IRON—AND THE DOMINATION OF THE WORLD*

COAL and iron are the twin foundations of the modern manufacturing industries and of modern commerce, and they are at the same time the principal sources of national power, wealth, and population, and, therefore, of national armed strength. The pre-eminence of the Anglo-Saxon nations and of Germany in the manufacturing industries, in wealth, and in national power is due not merely to racial causes, as is often asserted, but largely, and probably principally, to a mineralogical cause—to the fact that Providence has given gigantic deposits of coal and iron to the United States, to Great Britain, and to Germany, and only insignificant deposits to the Latin peoples, both in Europe and America, and to the Slavonic nations. Professor C. R. van Hise, of Wisconsin University, stated in his excellent book *The Conservation of the Natural Resources of the United States*, published in 1910:

“Coal is by far the most important of all the mineral products. Next to coal in importance is iron. These two are of much greater consequence than all the other mineral products together. The existence of extensive coal and iron fields has profoundly influenced modern civilisation. The greatest commercial nations are Germany, England, and America, and each has extensive coal and iron deposits. . . . It has been said that the nations that have coal and iron will rule the world.”

* From *The Nineteenth Century and After*, April, 1918.

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The great majority of historians and of political writers have completely neglected the influence of the economic factor upon history. According to popular conception, the wars of the past have been caused mainly by the unrestrained ambitions of rulers and their generals, by the intrigues of statesmen and courtiers, by national passions, or by mere misunderstandings. In reality many, and very likely most, wars have been brought about by economic causes, have been wars of competition.

Since the dawn of civilisation tribes and nations have contended for those economic resources which at the time were most prized by men. In primitive, pastoral times nations fought one another for flocks and herds, for grazing-grounds and drinking-water, for fruitful valleys and slaves, as we may learn from the Bible and other ancient documents. When civilisation progressed, they fought one another for great agricultural resources, for the possession of valleys and plains abundant in grain, such as the valley of the Nile and that of the Euphrates, for the North German plain, the Hungarian plain, and the plain of Lombardy. Primitive maritime nations fought one another for fishing-grounds, as did the early Dutch and the Hanseatic League. When commerce progressed, they fought one another for trade and colonies; for the control of rivers, such as the Rhine, and of harbours, such as Antwerp; for trading settlements and for trading monopolies, for the spice trade and the slave trade, for naval bases and for world-strategical positions whence the world's trade may be controlled. Rome and Carthage made war upon one another, not for the domination of the world, as is generally believed, but, as we may learn from Polybius, for the possession of the prolific wheatlands of Sicily, which both States required urgently for their clamouring townsmen who were dependent upon imported food. Athens engaged

in her disastrous war with Syracuse probably not through lust of domination, but in order to provide the teeming population of Attica with the necessary bread. The war of the Greeks against Troy also was probably waged for economic reasons. Ancient Greece received at one time her grain from the Black Sea. Very probably Troy controlled the Narrows and the grain trade, and the Greeks fought for the freedom of that trade.

As the nations have in the past fought for bread and fish, meat and spices, commerce and colonies, it seems only natural that in the industrial era, in the age of coal and iron, States should fight for the possession and control of those precious minerals which supply nations with wealth, strength, and an abundant population. The political and military value of the control of coal and iron has not yet been sufficiently appreciated by the statesmen of most nations, those of Germany excepted. Most diplomatists and publicists still think that the principal aim of a conquering nation is territory and population, as if we were still living in the agricultural age. The Germans recognised at an early date that the possession of an abundance of coal and iron can provide nations with wealth and power, railways and ships, implements and arms, and a vast population; that coal and iron are Nature's power-house and arsenal; that the lack of coal and iron condemns nations to stagnation in population and industry, in wealth and power, and almost disarms them. Germany fights, as will be shown in the following pages, largely for the object of securing for herself practically all the coal and iron on the Continent of Europe, and she means to leave the other nations of Europe as far as possible without coal and iron, so that they may be economically, and therefore militarily too, in the power of Germany, who alone would dispose of Nature's own arsenal.

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“Providence,” as Napoleon has told us, “fights as a rule on the side of the larger battalions.” Given equality in arms, equipment, organisation, and direction, supremacy in man-power is apt to be decisive in war. The size of armies depends on that of the civil population from which they are drawn. Formerly, when men lived chiefly by agriculture, ambitious rulers strove to increase their population by seizing districts where an abundance of food could be grown. In the age of coal and iron, agricultural territories are less important to ambitious States for the purpose of rearing a prolific population. Nowadays population increases not so much in districts where wheat is grown as in those where coal and iron are used. The effect upon population of the introduction of modern manufacturing based on coal may be seen in the case of England and Wales by the following figures:

INHABITANTS OF ENGLAND AND WALES.

1600	..	..	..	..	..	4,811,718
1700	..	..	..	..	..	6,045,008
1760	..	..	..	..	..	6,479,730
1801	..	..	..	..	..	8,872,980
1841	..	..	..	..	..	16,011,757
1881	..	..	..	..	..	25,974,439
1911	..	..	..	..	..	36,070,492

During the hundred years from 1600 to 1700 the population of England and Wales, which at the time lived chiefly by agriculture and a little commerce and shipping, grew only by 25 per cent. During the 160 years from 1600 to 1760, when conditions were very similar, it grew by only about 35 per cent. The industrial revolution, the introduction of modern manufacturing by means of machinery based upon coal, is usually assumed to have begun about 1760. During the 151 years which separate 1760 from 1911, the population of England and Wales grew, not by 35 per cent., as it did

in the 160 years previously, but by 455 per cent. It doubled in the forty years from 1801 to 1841. During the 110 years from 1801 to 1911 the population of England and Wales has more than quadrupled, and it has done so almost exclusively in the manufacturing and commercial districts, especially in the former. The agricultural portions of the country are probably now less populous than they were in 1801, partly because agriculture has been neglected, but chiefly because by the use of modern machinery one agricultural labourer can now do the work of several labourers. While between 1801 and 1911 the population of England and Wales has grown fourfold, that of the principal manufacturing and trading towns has grown eight-, nine-, tenfold and more. Between 1801 and 1911 the population of Manchester and Salford has increased from 94,876 to 945,690, that of Liverpool from 82,295 to 746,421, that of Birmingham from 70,660 to 525,833, that of Leeds from 53,162 to 445,550, that of Sheffield from 45,755 to 454,632, that of Bradford from 13,264 to 288,458, that of Nottingham from 28,861 to 259,904.

In Germany also the vast increase of the population has taken place exclusively in the towns. Between 1880 and 1910 Germany's agriculture has expanded mightily. The production of vegetable and of animal food has doubled. Yet, although between 1880 and 1910 Germany's population has increased by 19,500,000, the country population proper has decreased by about 600,000. The whole increase has taken place in the towns, and particularly in the large and the very large towns. Between 1880 and 1910 the population of Hamburg has increased from 289,859 to 931,035, that of Leipzig from 149,081 to 589,850, that of Cologne from 144,772 to 516,527, that of Frankfort from 136,819 to 414,576, that of Düsseldorf from 95,458 to 358,728, that

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of Essen from 56,944 to 294,663, that of Duisburg from 41,242 to 229,483, that of Dortmund from 66,554 to 214,226, that of Gelsenkirchen from 14,615 to 169,513, that of Bochum from 33,440 to 136,931. In 1880 only 3,273,144 people lived in German towns of 100,000 inhabitants and more. In 1910 13,823,348 lived in towns of 100,000 or more.

Even in the United States the population of the towns is rapidly overtaking that of the country, notwithstanding the gigantic agricultural area of the Great Republic and the vast progress effected by its most prosperous rural industries. The United States, like England and Germany, are growing chiefly in the towns, owing to an abundant supply of coal and iron, especially coal, while the agricultural population is comparatively stagnant. Between 1860 and 1910, while the population of the United States has grown from 31,443,321 to 91,972,266, or has not quite trebled, the population of New York has increased from 1,174,779 to 4,766,883, that of Chicago from 109,260 to 2,185,283, that of Los Angeles from 4,385 to 319,198, that of St. Louis from 160,773 to 687,029, that of Boston from 177,840 to 670,585, that of Cleveland from 43,417 to 560,663, that of Buffalo from 81,129 to 423,715, that of San Francisco from 56,802 to 416,912, that of Pittsburg from 77,923 to 533,905, that of Detroit from 45,619 to 465,766, that of Indianapolis from 18,611 to 233,650, that of St. Paul from 10,401 to 214,744, that of Denver from 4,759 to 213,381, etc.

It is significant that throughout the world population is densest on and around the actively exploited coal-fields.

In former times men lived by the work of their hands. Now they live by the work of their machines. A man employing powerful machinery can produce in field and

factory as much as a number of men can produce without its help. Consequently the States in which the employment of machinery has been most advanced and has become most general possess the most productive, the most prosperous, and the most advanced citizens, and owing to their great and rapidly increasing prosperity the inhabitants have increased at a very fast rate; while in those countries which lack machinery, production, wealth, and population have increased extremely slowly and have sometimes become stagnant. That may be seen by the example of France, which is very poor in coal. As the progress of nations in wealth, strength, and population depends on machinery, which is made chiefly of iron and steel and which requires vast quantities of coal, it follows that the intensive and general use of machinery is possible only in countries in which iron and coal, and especially the latter, are abundant.

It is not generally realised that the bulk of the coal mined is used, not for domestic, but for industrial purposes. The Royal Commission on Coal Supplies gave some years ago the following most interesting estimate :

COAL CONSUMPTION IN UNITED KINGDOM IN 1903.

	Tons.
For railways	13,000,000
For coasting steamers (bunkers)	2,000,000
For factories	53,000,000
For mines	18,000,000
For iron and steel industries	28,000,000
For other metals and minerals	1,000,000
For brickworks, potteries, glassworks, chemical works	5,000,000
For gasworks	15,000,000
For domestic purposes	<u>32,000,000</u>
	167,000,000

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In the United Kingdom less than one-fifth of the coal used in 1903 was employed for domestic purposes, and with every year industrial consumption should increase at a more rapid rate than domestic consumption, owing to the ever-growing intensification in the use of steam-power.

If we wish to gauge the vast and ever-growing importance of coal for national purposes, and especially for industrial and commercial requirements, we should consider not merely the employment of coal in a single year in a single country, but should study its progressive consumption throughout the world. From the best statistics available it appears that the production of coal, and therefore its consumption too, has increased as follows in the most important countries and throughout the world:

<i>Year.</i>	<i>United Kingdom.</i>	<i>Germany.</i>	<i>United States.</i>	<i>Austria-Hungary.</i>
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1865	99,760,000	28,330,000	24,790,000	2,030,000
1875	135,490,000	48,530,000	48,200,000	13,060,000
1885	161,960,000	73,670,000	102,180,000	20,430,000
1895	194,350,000	103,960,000	177,590,000	27,250,000
1905	239,890,000	173,660,000	351,120,000	40,720,000
1913	287,410,000	273,650,000	504,520,000	51,580,000

<i>Year.</i>	<i>France.</i>	<i>Russia.</i>	<i>Belgium.</i>	<i>Other Countries.</i>
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1865	11,840,000	330,000	11,840,000	3,160,000
1875	16,950,000	1,170,000	15,010,000	6,890,000
1885	19,510,000	4,240,000	17,440,000	13,390,000
1895	28,240,000	9,100,000	20,410,000	20,220,000
1905	36,050,000	17,120,000	21,840,000	45,620,000
1913	40,190,000	29,870,000	22,500,000	111,280,000

TOTAL COAL PRODUCTION.						
Year.	..	..	..	..	..	Tons.
1865 ..	..	..	..	..	..	182,080,000
1875 ..	..	..	..	..	..	285,300,000
1885 ..	..	..	..	..	..	412,820,000
1895 ..	..	..	..	..	..	581,120,000
1905 ..	..	..	..	..	..	928,020,000
1913 ..	..	..	..	..	..	1,321,000,000

In 1865 manufacturing by means of coal-using machinery was already highly developed. Between 1865 and 1913, within the memory of many living men, the consumption of coal has increased from 182,000,000 tons to 1,321,000,000 tons, or has grown more than sevenfold.

The industrial progress of nations can best be measured by their coal production, and especially by their coal consumption. Between 1865 and 1913 coal production has increased threefold in the United Kingdom, tenfold in Germany, and no less than twentyfold in the United States. In 1865 the United Kingdom alone produced 55 per cent. of the world's coal. At that time England was still, as Cobden called it, the workshop of the world. In 1913 the United Kingdom produced only 22 per cent. of the world's coal. It was no longer the world's workshop.

The vast progress of the Anglo-Saxon nations and of Germany in the manufacturing industries, commerce, wealth, strength, and population can easily be explained by their remarkable preponderance in coal. In 1913 the United States, Germany, and the United Kingdom combined produced $80\frac{1}{2}$ per cent. of the world's coal, while British India and the Dominions produced 53,710,000 tons of coal, or $4\frac{1}{2}$ per cent. of the world's output. During the year previous to the War, the Anglo-Saxon nations and Germany combined raised, therefore, 85 per cent. of the world's coal, and the rest of the world only 15 per cent. In other words, the Anglo-Saxon nations and

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Germany were producing six times as much coal as all the other nations of the world together. They possessed, therefore, roughly speaking, a similarly great preponderance in engine-power and in modern power of production. The supremacy of the Anglo-Saxon and German peoples in all the material elements of life and the rapid increase of their population are obviously due not so much to their genius as to chance, not so much to racial as to mineralogical causes.

In 1865 the United Kingdom was by far the largest coal-producer and coal-user in the world. Lately the first place has been taken by the United States, the industrial and commercial progress of which has been most remarkable. According to the very full American Government statistics, coal production in the Republic has increased as follows:

<i>Year.</i>						<i>Tons.</i>
1814	..	..	..	..	..	20
1820	..	..	..	..	..	3,080
1830	..	..	..	..	..	285,779
1840	..	..	..	..	..	1,848,249
1850	..	..	..	..	..	6,266,233
1860	..	..	..	..	..	13,044,680
1870	..	..	..	..	..	29,496,054
1880	..	..	..	..	..	63,822,830
1890	..	..	..	..	..	140,866,931
1900	..	..	..	..	..	240,789,310
1910	..	..	..	..	..	445,810,000
1913	..	..	..	..	..	504,520,000

Not unnaturally America's industries, wealth, strength, and population also have increased at an extraordinarily rapid rate in accordance with the increase of the national coal consumption.

Coal production depends mainly upon two factors: upon the quantity and quality of coal contained in the soil, and upon the greater or lesser facility with which

the coalfields can be exploited. Coal strata which lie at a very great depth, or which are exceedingly thin and full of vaults through geological disturbance, or which are liable to be flooded owing to the nature of the surrounding soil, are, of course, less valuable than deposits in which the coal occurs in thick and easily workable layers close to the surface.

As it would lead too far to compare the coal deposits possessed by the different nations with regard to the quality of the coal and the greater or lesser facility of exploiting them, we must be content to disregard these important but highly technical factors, and to compare summarily the stores of coal possessed by the nations of the world. The most authoritative and most recent inventory of the world's riches in coal is contained in the magnificent three-volume monograph *Coal Resources of the World*, which was placed before the International Geological Congress held in Canada in 1913. I have extracted from it the following figures:

THE WORLD'S COAL RESOURCES.

	Tons.
In Europe	784,190,000,000
In North America	5,073,426,000,000
In South America	32,102,000,000
In Asia	1,279,586,000,000
In Africa	57,839,000,000
In Australia and Oceania	170,410,000,000
 Total	<hr/> 7,397,553,000,000

It will be noticed that North America possesses, according to the present state of geological knowledge, two-thirds of the coal of the world. South America, Australia, and Africa, the soil of which, however, has not yet been sufficiently explored, contain, apparently, only little coal. Second in importance to the North American coal-measures are the coalfields of Asia. The richest coal

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deposits on the Asiatic continent occur in China. The province of Shansi, near Kiau Chau, is particularly rich not only in excellent coal, but in iron ore as well. Germany seized Kiau Chau not in order to compete with Hongkong—trade is a very unimportant source of national wealth and strength if compared with production—but in order to control and exploit some of the largest and most valuable coal and iron deposits in the world with the help of cheap Chinese labour. An iron-and coal-producing India would obviously be infinitely more valuable than an India producing rice and millet, cattle and cotton.

The European coalfields rank third in importance. They are inferior to those of Asia, and they are unimportant if compared with the gigantic deposits of North America. If coal should continue to be the principal source of mechanical power—and there is at present no indication that it will be superseded by electricity or the force derivable from the tides and the sun's rays—North America is likely to become not only the world's principal seat of the manufacturing industries and of wealth, but the world's principal centre of population and of military power as well. In a century or two Europe may occupy a secondary position in the world owing to its relative poverty in coal.

Now let us study in greater detail the distribution of coal among the various nations:

COAL RESOURCES OF EUROPE.

Tons.

Germany	..	..	..	..	423,356,000,000
Great Britain and Ireland	..	..	..	..	189,535,000,000
Russia	..	..	..	..	60,106,000,000
Austria-Hungary	59,269,000,000
France	17,583,000,000
Belgium	11,000,000,000
Spain	8,768,000,000

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	Tons..
Spitzbergen	8,750,000,000
Holland	4,402,000,000
Balkan States	996,000,000
Italy	243,000,000*
Sweden, Denmark, and Portugal	184,000,000
Total	<u>784,192,000,000</u>

COAL RESOURCES OF NORTH AMERICA.

United States	3,838,657,000,000
Canada	1,234,269,000,000
Newfoundland	500,000,000
Total	<u>5,073,426,000,000</u>

COAL RESOURCES OF SOUTH AND CENTRAL AMERICA.

Columbia	27,000,000,000
Chili	3,048,000,000
Peru	2,039,000,000
Argentine	5,000,000
Venezuela	3,000,000
Honduras	5,000,000
Total	<u>32,102,000,000</u>

COAL RESOURCES OF ASIA.

China	995,587,000,000
Siberia	173,879,000,000
India	79,001,000,000
Indo-China	20,002,000,000
Japan	7,970,000,000
Persia	1,858,000,000
Manchuria	1,208,000,000
Korea	81,000,000
Total	<u>1,279,586,000,000</u>

COAL RESOURCES OF AFRICA.

Transvaal	36,000,000,000
Rest of South Africa	20,200,000,000
Belgian Congo	990,000,000
Rhodesia	569,000,000
Southern Nigeria	80,000,000
Total	<u>57,839,000,000</u>

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COAL RESOURCES OF AUSTRALIA AND OCEANIA.

			Tons.
New South Wales	118,439,000,000
Victoria	..	..	31,166,000,000
Queensland	..	..	15,218,000,000
New Zealand	..	..	- 3,386,000,000
Netherlands India	..	..	1,311,000,000
Western Australia	..	..	653,000,000
British North Borneo	..	..	75,000,000
Tasmania	..	..	66,000,000
Philippines	..	..	66,000,000
Total	..	..	170,380,000,000

In addition to the coalfields enumerated, there is a large one in the Antarctic.

At the present rate of consumption the known coal-supply should suffice for about seven thousand years.

The detailed statistics given show that the United States alone possess more than one-half of the world's coal, that their store is nearly five times as large as that of the whole of Europe, and twenty times as large as that of the United Kingdom. Providence has endowed the Great Republic with a super-abundance of power. The vastness of the coal resources of the United States may be gauged from the fact that the workable coalfields cover 496,776 square miles, an area which is more than four times as large as the whole of the United Kingdom. The State of Pennsylvania alone produces at present more coal than the entire United Kingdom.

Nature has been extraordinarily kind to some nations and exceedingly niggardly to others. The coal resources of some great nations, such as France, Italy, and Japan, are quite insignificant. At their present rate of consumption, the United States would exhaust the coal of all France in about thirty years, and that of all Italy in about five months. France has not only very little coal, but her coal strata are dispersed throughout the country.

In addition the seams run often at steep angles. They are, as a rule, very thin and expensive to work, and they are full of faults and quite erratic. The industrial backwardness of France and Italy is due not so much to lack of enterprise as to lack of coal. The scarcity of coal is at the same time limiting the population of these two countries, for the expansion of population depends on the means of subsistence, and among these coal stands foremost. Coal regulates the life and progress of modern nations. The poverty of Ireland, its dissatisfaction, and industrial backwardness, is largely due not to political reasons, but to lack of coal.

According to the figures supplied above, Germany possessed before the War 55 per cent. of the coal of all Europe, and more than 70 per cent. of the coal of the European Continent. Fully realising that coal and iron are nowadays as important as land was in the agricultural era, that coal and iron can readily be converted into industry, commerce, wealth, population, and military power, Germany has seized the coalfields of Belgium, the richest coalfields of France, which lie near the Belgian frontier, and the great coalfields of Poland and of Western Russia as well, and she intends to retain them if possible. She means to control Nature's power-house and arsenal. She has, in the course of the War, acquired a veritable coal monopoly on the Continent, for the only other Continental State which possesses a large amount of coal is Austria-Hungary, her ally. Germany has claimed Spitzbergen, which hitherto has been considered No-Man's-Land, because it contains almost as much coal as Belgium, and she has been endeavouring to monopolise the mineral resources of Spain, which, in addition to iron and copper, has an important store of coal. Germany controls at present about 75 per cent. of the coal of Europe and about 95 per cent. of the coal of the Continent.

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She controls, therefore, the principal source of modern industrial, commercial, financial, and military power.

Before the War Germany had considerably more than twice as much coal as the whole of the United Kingdom. The Rhenish-Westphalian coalfield alone, upon and around which are situated the towns of Düsseldorf, Essen, Duisburg, Dortmund, Elberfeld, Gelsenkirchen, Barmen, Bochum, Mülheim an der Ruhr, Crefeld, Hamborn, Solingen, Remscheid, contains 213,566,000,000 tons of coal, or considerably more than the whole of the United Kingdom. Hence the greatest centre of population in Germany is to be found on and around these coal-pits, which are largely responsible for Germany's marvellous progress in industry, commerce, wealth, population, and military strength.

Coal is of infinite value to the nations, not only because it is convertible into industrial, military, and political power, but also because modern science has succeeded in extracting from it some of the most precious and most necessary commodities, such as gas, tar, pitch, oil, benzol, naphthaline, creosote, ammonia, carbolic acid, toluol, more than a thousand dyes, fertilisers, disinfectants, explosives, and some of the most valuable drugs, such as saccharin, aspirin, phenacetin, antipyrin, and dozens of others.

In former centuries civilisation was based upon wood-fuel and timber. The present age is the age of coal and iron. Modern machinery, modern implements, and modern means of locomotion and transport by land and sea are made of steel. The expansion in the production of iron has been as marvellous and as rapid as that of coal. The best and most modern survey of the iron stores of the world is contained in a large work, *The Iron Resources of the World*, which was placed before the International Geological Congress at Stockholm in 1910. I have

extracted from it some of the figures given in these pages. Until recently iron was virtually one of the rare metals. Only lately has its use become general. That may be seen from the following figures:

WORLD'S PRODUCTION OF PIG IRON.

	<i>Tons.</i>
In 1800	800,000
In 1850	4,800,000
In 1871	12,900,000
In 1891	26,200,000
In 1910	66,000,000

Iron is no longer smelted with wood. About three tons of coal are required to smelt a ton of iron. The transport of large quantities of minerals is very expensive. Nations rich in coal or in iron, or in both, are reluctant to sell these precious raw materials to their competitors. It follows that only those nations can develop a large iron industry which are rich in coal and iron, or which are fortunate enough to be able to obtain one of these minerals, or both, easily and cheaply from abroad. The principal iron industries of the world are based mainly upon the exploitation of native coal and iron ore. The iron-ore deposits of the world are, according to the Geological Report of 1910, distributed as follows over the five continents:

RESOURCES OF METALLIC IRON CONTAINED IN IRON ORE.

Actual Reserves. *Potential Reserves.*

	<i>Tons.</i>	<i>Tons.</i>
Europe ..	4,733,000,000	12,085,000,000 + Considerable
America ..	5,154,000,000	40,731,000,000 + Enormous
Asia ..	156,000,000	283,000,000 + Enormous
Africa ..	75,000,000	Many thousands + Enormous
Australia ..	74,000,000	37,000,000 + Considerable
	10,192,000,000	53,136,000,000 + Enormous

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If we notice that for some inscrutable reason Providence has given to America not only the bulk of the world's coal, but also the bulk of the world's iron.

Let us now consider how the different nations share the iron resources of the world.

RESOURCES OF METALLIC IRON CONTAINED IN IRON ORE.

IRON RESOURCES OF EUROPE.

	<i>Actual Reserves.</i>	<i>Potential Reserves.</i>
	<i>Tons.</i>	<i>Tons.</i>
Germany ..	1,270,000,000	Considerable
France ..	1,140,000,000	Considerable
Sweden ..	740,000,000	105,000,000
United Kingdom ..	455,000,000	10,830,000,000
Russia ..	387,200,000	424,700,000
Spain ..	349,000,000	Considerable
Norway ..	124,000,000	525,000,000
Austria ..	90,400,000	97,000,000
Luxemburg ..	90,000,000	?
Greece ..	45,000,000	?
Belgium ..	25,000,000	?
Hungary ..	13,100,000	34,100,000
Italy ..	3,300,000	1,000,000
Finland ..	?	16,000,000
Bosnia and Herzegovina ..	?	11,300,000
Bulgaria ..	?	700,000
Switzerland ..	800,000	800,000
Portugal ..	?	39,000,000
Total ..	4,732,800,000	12,084,600,000

IRON RESOURCES OF AMERICA.

Actual Reserves. *Potential Reserves.*

	<i>Tons.</i>	<i>Tons.</i>
United States ..	2,304,600,000	37,222,000,000
Newfoundland ..	1,961,000,000	Enormous
West Indies ..	856,800,000	454,000,000
Canada ..	Considerable	Probably enormous
Mexico ..	30,000,000	Probably considerable
Columbia, Venezuela, Bolivia, Peru, Chili ..	2,000,000	Considerable
Brazil ..	?	3,055,000,000
Total ..	5,154,400,000	40,731,000,000 + Enormous

IRON RESOURCES OF ASIA.

	<i>Actual Reserves.</i>	<i>Potential Reserves.</i>
	<i>Tons.</i>	<i>Tons.</i>
British India ..	65,000,000	250,000,000 + Considerable
China ..	60,000,000	Probably enormous
Japan ..	28,000,000	Moderate
Korea ..	2,000,000	Probably moderate
Philippines ..	500,000	?
Asiatic Russia ..	?	14,800,000
Persia ..	?	18,000,000
Total ..	<u>155,500,000</u>	<u>282,800,000 + Enormous</u>

IRON RESOURCES OF AFRICA.

	<i>Actual Reserves.</i>	<i>Potential Reserves.</i>
	<i>Tons.</i>	<i>Tons.</i>
Algiers and Tunis ..	75,000,000	?
Rest of Africa ..	?	Enormous
Total ..	<u>73,000,000</u>	<u>Enormous</u>

IRON RESOURCES OF AUSTRALIA AND OCEANIA.

	<i>Actual Reserves.</i>	<i>Potential Reserves.</i>
	<i>Tons.</i>	<i>Tons.</i>
New South Wales ..	26,800,000	1,700,000
Western Australia ..	?	15,000,000 + Considerable
South Australia ..	?	12,300,000
Queensland ..	?	7,000,000
Victoria ..	?	Moderate
Tasmania ..	15,000,000	1,000,000
New Zealand ..	<u>32,000,000</u>	<u>100,000 + Considerable</u>
Total ..	<u>73,800,000</u>	<u>37,100,000 + Considerable</u>

According to the present state of geological knowledge, Nature has given to the United States not only the world's greatest coalfields, but also the world's greatest iron-mines. While their store of coal is nearly five times as great as that of all Europe, their store of iron is almost exactly three times as great as that of all Europe.

Modern civilisation is based upon the use of coal and

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iron. Since 1865 the production of iron has grown as follows in the principal countries:

<i>Year.</i>	<i>United Kingdom.</i>	<i>Germany.</i>	<i>United States.</i>	<i>Austria-Hungary.</i>
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1865	4,896,000	975,000	845,000	292,000
1875	6,432,000	2,029,000	2,056,000	463,000
1885	7,369,000	3,687,000	4,111,000	715,000
1895	7,827,000	5,465,000	9,597,000	1,128,000
1905	9,746,000	10,988,000	23,360,000	1,372,000
1910	10,380,000	14,793,000	27,740,000	2,010,000

<i>Year.</i>	<i>France.</i>	<i>Russia.</i>	<i>Belgium.</i>	<i>Other Countries.</i>
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1865	1,290,000	299,000	471,000	413,000
1875	1,416,000	427,000	540,000	557,000
1885	1,630,000	538,000	713,000	1,039,000
1895	2,005,000	1,453,000	829,000	1,083,000
1905	3,077,000	2,125,000	1,310,000	2,075,000
1910	4,001,000	3,040,000	1,804,000	2,553,000

TOTAL IRON PRODUCTION.

<i>Year.</i>	<i>Tons.</i>				
1865	9,481,000
1875	13,920,000
1885	19,792,000
1895	29,387,000
1905	54,053,000
1910	66,321,000

Between 1865 and 1910 the production of iron has increased from 9,481,000 tons to 66,321,000 tons, or almost exactly sevenfold. It is significant that the production of iron has expanded at almost the identical ratio as the production of coal. In 1865 the United Kingdom produced 55 per cent. of the world's coal and 52 per cent. of

the world's iron. In 1910 it produced only 22 per cent. of the world's coal and only $15\frac{1}{2}$ per cent. of the world's iron. Between 1865 and 1910 iron production has doubled in the United Kingdom, and has grown fifteen-fold in Germany, and no less than thirty-threefold in the United States.

Nature has given to the Anglo-Saxon nations and to the German nation a vast preponderance in both coal and iron. Of the 66,321,000 tons of iron produced throughout the world in 1910, 52,913,000 tons, or 80 per cent., were made by the United Kingdom, Germany, and the United States combined. The Anglo-Saxon nations and Germany owe their pre-eminence in industry, commerce, wealth, and power to accident, to the fact that Providence has given them vast stores of coal and iron, which are the twin bases of modern industry, modern wealth, and modern power.

The detailed tables given in these pages show that among the nations of Europe Germany is foremost not only in coal, but also in iron. She possessed before the War 10 per cent. more than France and about three times as much iron as the United Kingdom. She had about 25 per cent. of the iron of all Europe and about 30 per cent. of the iron existing on the European Continent. Italy is as poor in iron ore as she is in coal. Her total supply would be exhausted by the United States in a few months.

The vastness of the French iron deposits was discovered only a few years ago. Hitherto France could smelt only a small portion of her iron ore, as she lacks the necessary coal. Unfortunately for France, not only her greatest coal deposits, but her greatest iron deposits as well lie very near her eastern frontier. Her principal iron-mines are situated about the town of Briey, close to the fortress of Metz. Germany seized during the first weeks of the

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War not only France's principal coalfields, but the bulk of France's iron ore as well. Her Lorraine iron-mines contain 91 per cent. of her iron ore. In the districts occupied by the German troops France produced before the War 68.8 per cent. of her coal, 78.3 per cent. of her coke, and 90 per cent. of her iron ore. The seriousness of that blow to her can scarcely be overstated.

Germany has seized the iron ore of Luxembourg and of Belgium. Furthermore, she has seized the iron-ore deposits in Poland and in Western Russia, and she does not intend to abandon any of her precious conquests. Lastly, she has monopolised the iron ore exported from Sweden, and has endeavoured to control the iron-ore trade of Spain. Thus she has obtained approximately as great a monopoly of iron ore on the Continent as she has of coal. It is worth noting that the United Kingdom possesses only one-fourth of Europe's coal, and, as far as her actual reserves are concerned, less than one-tenth of Europe's iron. Germany has seized Europe's powerhouse and arsenal, and she does not intend to relinquish them unless compelled. At the present moment Germany absolutely dominates Europe with the coal and iron under her possession and control.

Germany's statesmen and Generals have obviously recognised the immense present, and the still greater prospective, value of controlling the bulk of Europe's coal and iron. They have recognised that coal and iron are the sinews of war and of peace. They have recognised that coal and iron are indispensable in modern economic life and modern warfare; that they are the principal sources of wealth, power, and population; that nations which lack coal and iron are bound to remain poor and industrially backward; that the population of the latter is bound to remain stagnant; that they are bound to become tributaries to the nations which possess an abundance of these invaluable and irreplaceable minerals; that

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nations lacking coal and iron are practically disarmed and must remain militarily helpless.

On May 20, 1915, the six greatest associations of German business men presented to the Imperial Chancellor a petition in which it was stated:

. . . By acquiring the line of the Meuse and the French coast of the Channel, Germany would obtain not only the ore deposits of Briey, which have already been mentioned, but also the coal districts of the Department du Nord and of the Department Pas de Calais. . . .

Our demands, which at first sight, seem to be dictated by purely economic motives, must be considered from a larger point of view. They spring from the necessity of increasing Germany's national and military power to the utmost. Our demands must therefore be considered from the military point of view. This is particularly the case with regard to the acquisition of agricultural territory, upon which stress has been laid in the present petition, and with regard to the seizure of the ore-bearing territories of the Meurthe and Moselle, and of the French coal districts of the Departments du Nord and Pas de Calais, and the Belgian coal districts. . . .

Acquisitions in the ore and iron districts mentioned are required not only by our economic interests, but also by military necessity. . . .

The possession of vast supplies of coal, and particularly of coal rich in bitumen, such as that which is found in Northern France, is at least as decisive for the issue of the War as is the possession of iron ore. Belgium and Northern France together produce more than 40,000,000 tons of coal per annum. Besides, coal is nowadays one of the determining political factors. . . .

It is generally known that our most important explosives are derived from coal, their constituents being obtained during the coking process, and that coal is important also for the production of ammonia. Coal can provide us with benzol, the only product with which we can replace the benzine which we lack. Lastly, coal furnishes us with tar, which can be converted into oil-fuel, which is indispensable for naval purposes, and into lubricants. . . .

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In summing up, we would say that the War aims indicated will secure permanently Germany's national economy, and at the same time guarantee her military strength and her political independence and power. In addition, they will expand Germany's economic opportunities. They will provide work for the workers, and will therefore be of advantage to labour as a whole.

Professor Schumacher, an eminent economist, stated in a lecture delivered on June 20, 1915:

The whole western frontier of Germany from south to north must be improved as far as circumstances permit. It is no less important to provide for the German War industries upon which successful warfare must be based. . . . Before all we must secure for Germany the possession of the raw materials necessary for our War industries, and at the same time deprive our enemies of the possession of these.

The iron deposits are most important. Without the minette ore of Lorraine we cannot maintain our iron and steel production on a scale sufficiently large for the conduct of the War. Happily, we can boast of the possession of the largest iron deposits in Europe. These we have obtained in consequence of the victorious war of 1870-1871. The Peace of Frankfort was to give Germany the entire iron-ore deposits of Lorraine. We did not succeed in getting them because the geologists whom Bismarck consulted at the time when the frontier was delimited made a mistake. Since the eighties we know that the larger portion of the ore deposits of the plateau of Briey has been left to France, though Bismarck imagined that the bulk of the iron ore had been obtained by Germany. To-day we can rectify that serious error because, happily, Germany seized the French ore district at the beginning of the War, and is holding it firmly in her grasp.

Second in importance for Germany's War industries is coal, especially that kind of coal which can readily be converted into coke and which yields the principal explosives. We could not continue the War successfully if we did not obtain the necessary supply of iron ore from the soil of Lorraine, and we could also not hope to succeed had not Nature endowed Germany, and particularly the

Rhenish Province and Westphalia, and the neighbouring districts of Belgium and of Northern France, with excellent coking coal. Similar quantities of that precious raw material do not occur elsewhere in Europe, and their quality is of the best. Now, when we have learned how important the question of munitions is for the issue of the War, and when we are already compelled to employ Belgian coal for Germany's own requirements, we must declare that the vital needs of the German nation in war and in peace make it impossible to render up once more to the enemy these mainsprings of military and economic power.

In Germany science and industry, commerce and the army have worked hand in hand. The German statesmen, the German Generals, and the German people have become convinced that in the modern world not cotton but coal is king, and that coal shares his rule with iron; that the nation which dominates the coal and iron resources of Europe dominates Europe itself industrially, commercially, financially, and militarily. The German conception is no doubt correct, and it is worth bearing in mind that at present, and for decades to come, the domination of Europe is equivalent to the domination of the world. Germany, if victorious, may dominate the world, not so much owing to her vast territorial acquisitions in the East and the West as owing to her acquisition of a monopoly of coal and iron on the Continent of Europe. The coal and iron problem is very likely far more important than most political problems, such as the fate of Constantinople and the problem of nationalities. Unfortunately, most statesmen and diplomats live in the past. They talk of territories and strategical points and harbours and racial questions as if we were still living in the eighteenth century. Unfortunately, most statesmen and diplomats, and most publicists as well, have not yet recognised that he who dominates the coal and iron industries dominates the world.

CHAPTER III

BRITAIN'S TRUE WEALTH AND THE RELATIVE UNIMPORTANCE OF THE WAR DEBT*

ACCORDING to Mr. Bonar Law's Budget forecast, the British National Debt will amount to £7,980,000,000 at the end of the financial year, on March 31, 1919. The British War expenditure has constantly been rising. It amounts at present to approximately £2,000,000,000 per year, and may continue increasing. In order to finance the War a large portion of Britain's foreign investments had to be sold and vast sums of money had to be borrowed from the United States. The struggle may last another year or longer. The after-War settlement is bound to be exceedingly costly. Ultimately the British War debt may approximate, or may even exceed, what is generally called the national wealth. Before the war it was estimated that Britain's national wealth came to about £15,000,000,000. Not unnaturally many are alarmed at the gigantic and rapidly growing amount of the British indebtedness. Some pessimists believe that in the end England will be utterly ruined, that Britain must make peace promptly to avoid national bankruptcy and financial annihilation, that in any case Great Britain will be greatly impoverished, and that she will become financially a tributary to the United States. It has been asserted that Lord Lansdowne's unfortunate letter was inspired by these considerations. In the following pages an

* From *The Nineteenth Century and After*, May, 1918.

attempt will be made to survey the position in all its bearings.

Those who tell us that Great Britain's national wealth amounts to £15,000,000,000, that before long the National Debt will be greater than the entire wealth of the country, suffer from a confusion of thought. They confuse national wealth and individual wealth, which is a totally different thing. Man's span of life is short. A nation's life is long and it may last for ever. One cannot, therefore, ascertain the true wealth of a nation by adding up the property of all the short-lived citizens of the present. The wealth of a nation is not fixed. It is not stationary. On the contrary, it is subject to growth and decline as is the nation itself. It is therefore susceptible of indefinite expansion or to equally indefinite contraction. Whether the wealth of a nation will expand or contract depends on its fortunes and on its policy.

Before considering the problem of the British National Debt, I would say that men are apt to confuse real wealth and paper wealth. The former is obviously far more important than the latter. Moreover, in discussing the influence of the National Debt upon the wealth of a nation, we must carefully discriminate between debt held at home and debt held abroad. Happily, Britain's foreign indebtedness is relatively small. The bulk of the British War Debt is held in the country. The British paper debt is therefore balanced by an almost equally great British paper wealth. The fact that a great domestic debt does not impoverish a nation can easily be proved. If we assume the impossible, if we assume that the whole British debt should be repudiated, the loss to the owners of the debt would be almost exactly balanced by the gain to the nation as a whole. A number of capitalists would be ruined, but the real wealth of the country, which consists in the great wealth-creating

resources, such as fields, factories, mines, etc., would be as great as ever. During the Revolution France repeatedly repudiated her national debt. Yet at the end of the revolutionary period the country was considerably richer than at its beginning.

A large national debt may inconvenience, but cannot impoverish, a nation as long as the nation preserves its great wealth-creating resources, and as long as the bulk of the debt is held at home. An unduly large foreign debt would require gigantic yearly payments for interest, and these payments would be made nominally in gold. In reality they would be affected by large yearly exports of goods which would not be balanced by correspondingly large imports. It follows that a large foreign debt would impoverish Great Britain to some extent. The foreign bondholders would be in the position of great absentee landlords. They would drain the country of a large portion of its real wealth.

Financiers and bankers who spend their lives in handling paper securities are apt to attach undue importance to paper wealth. To them paper is often equivalent to wealth. However, no nation known to history has ever been crushed by its domestic paper debt, but many nations have been ruined by the destruction of their real wealth, by the loss of their great wealth-creating resources. These may be lost almost as easily in peace as in war. Germany was ruined by the Thirty Years' War because it destroyed half the population and the bulk of the live-stock, machinery, and tools, because it emptied the towns and converted the agricultural districts into a wilderness. The vast wealth of the Arab Empire on the Euphrates was destroyed when the conquering Turks destroyed the canals and irrigation works of Mesopotamia, upon the existence of which the agriculture of the country depended for its prosperity. The wealth of Venice was destroyed

in peace when the Portuguese discovered the sea route to India around the Cape of Good Hope, when the trade between the East and the West, which was the greatest wealth-creating resource of Venice, ceased to flow through the Mediterranean. The population and wealth of France became relatively stagnant in peace when, in the age of coal, France discovered that she possessed only an inadequate supply of that indispensable mineral.

Great Britain cannot be ruined by her paper debt, however large it may ultimately be, but she may be ruined by the loss of her wealth-creating resources.

Money, even gold, is, after all, merely a simulacrum of wealth, for real riches consist not in counters made of paper or metal, which have only a conventional value, but in useful and necessary things. The Germans are aware that the wealth of nations consists, not in money, but in real values; that real wealth is derived from the great natural resources, such as fruitful territories, useful minerals, and men. They have therefore striven to seize the great wealth-creating resources of their opponents. They have occupied, and they mean to retain, the vast coal and iron fields of Belgium, France, and Russia, and the oilfields of Rumania, the value of which is absolutely incalculable. If Great Britain should be victorious, she will retain her great wealth-creating resources, the exploitation of which has only begun. These resources will in course of time yield undreamt-of wealth, which will easily pay for the cost of the War. If, on the other hand, she should be defeated and compelled to sue for peace, the Germans would presumably treat her as they have treated Russia. They would very likely break up the United Kingdom and the British Empire. They would most probably occupy Ireland, and would occupy and exploit the British coalfields, the mineral contents of which, at the rate of 10s. per ton, are worth about

£100,000,000,000, or six times as much as the so called national wealth of the country. Thus they would at the same time vastly enrich themselves and ruin Great Britain for all time.

If the War should end in Britain's victory, the cost of the struggle, however great, will appear small to future generations, for the wealth of nations tends to increase at an ever-growing rate. That seems to be an economic law.

During historical times the wealth of nations has vastly increased, and there is no reason for believing that this continuous expansion of national wealth will come to a standstill. The universal and rapid increase of the wealth of nations is due to two factors: to the vast and continuous increase of the population and the constantly growing productive power of men on the one hand, and to the rapid and continuous depreciation of money on the other hand. Both factors will probably continue to be operative to the end of civilisation.

The depreciation of money alone should automatically reduce the gigantic British War Debt to one-half, and perhaps to one-quarter, of its nominal amount within a few decades. This assertion seems so extraordinary that it requires some explanation.

For many centuries the value of money has been shrinking. From Professor Thorold Rogers' excellent *History of Agriculture and Prices in England* we learn that in the thirteenth century an ox was worth about 10s., a sheep 1s. 6d., a quarter of wheat cost about 5s., while a labourer received a wage of 2d. or 3d. per day. Since then prices have continually risen. About the year 1500 an ox cost 22s. 6d., a sheep 2s. 4d., a quarter of wheat 5s. 6d., and a labourer was given a wage of 5d. or 6d. per day. In the year 1500 old people were no doubt very indignant at the colossal rise in prices. Very

likely they complained then about profiteering and about the extortionate demands of the workers, exactly as people do nowadays. In the Middle Ages powerful Sovereigns raised with difficulty on the security of their Crown jewels or of a province a loan of a few thousand pounds, for that was at the time a gigantic sum. From the early Middle Ages to the present day money has continued depreciating. An American mechanic now earns a sum that was formerly considered to be a King's ransom. The depreciation of money has not yet come to an end.

Economists frequently state that the great and continuous depreciation of money has been caused by the great and constantly increasing production of gold and silver. That is, in my opinion, merely one of the causes, but not the principal one, of that phenomenon. I believe the chief reason of the universal depreciation of the currency is to be found in the universal desire of men to increase their profits and their wages. The profiteers in the counting-house and at the bench may prove public benefactors against their will. By constantly increasing their monetary demands, by insisting on doubled and quadrupled profits and wages, they may, and probably will, depreciate very greatly the present value of money, and they may thus reduce the War Debt to one-half or one-quarter. It will be quite manageable when unskilled labourers receive a wage of 10s. or £1 a day.

The wealth of advancing nations is not stationary, but is susceptible to indefinite expansion. From time to time eminent economists and statisticians have calculated the wealth of their countries. However, what they have called "national wealth" was not the wealth of their nation, which, rightly considered, is unmeasureable, but was merely the joint wealth of the individuals of their generation. Mulhall's *Dictionary of Statistics* con-

tains the following estimates regarding the "national wealth" of the United Kingdom:

BRITAIN'S NATIONAL WEALTH.

	£
In 1660 England and Wales, according to Petty ..	250,000,000
In 1703 Davyant ..	490,000,000
In 1774 Young ..	1,100,000,000
In 1800 Great Britain, according to Beeke and Eden ..	1,740,000,000
In 1812 United Kingdom .. Colquhoun ..	2,190,000,000
In 1822 Lord Liverpool ..	2,600,000,000
In 1833 Pablo Pebrer ..	3,750,000,000
In 1840 Porter ..	4,100,000,000
In 1865 Giffen ..	6,113,000,000
In 1875 Giffen ..	8,548,000,000
In 1885 Giffen ..	10,037,000,000
In 1903 Giffen ..	15,000,000,000
In 1903 British Empire Giffen ..	22,250,000,000

In 1660 England's national wealth was exceedingly small. It was inferior to the deposits in one of the leading London Banks of the present. It was smaller than Mr. Rockefeller's wealth. Between 1660 and 1903 the wealth of the United Kingdom increased sixtyfold. Between 1800 and 1903 it grew eightfold.

Mulhall gives the following estimates regarding the national wealth of France:

FRANCE'S NATIONAL WEALTH.

	£
In 1789, according to Lavoisier	1,520,000,000
In 1815 Chaptal	1,800,000,000
In 1853 Girardin	5,000,000,000
In 1871 Wolowski	7,000,000,000
In 1879 Leroy Beaulieu	7,520,000,000
In 1885 Guyot	8,560,000,000

Between 1815 and 1885 the wealth of the French citizens increased almost fivefold.

The increase of the wealth of England and France shown in these tables is partly real and partly fictitious.

It is due in part to the increase of population and of national production, and in part to the depreciation of the currency. During the last century the purchasing power of the sovereign has declined to about one-half. A pound is now worth only as much as ten shillings were in 1815. The war debt of £840,850,491 which existed at the end of the Napoleonic War was therefore reduced to £420,425,245 by the shrinkage of the purchasing power of the currency. The war debt of 1815 appears small to the present generation. Similarly, the War Debt of 1918 may appear small to future generations.

The increase in the accumulated wealth of the citizens is naturally accompanied by a similar increase in their income. This increase also is partly real and partly fictitious. The following estimates show its progress during recent years:

INCOME OF THE UNITED KINGDOM.

	£
In 1884, according to Sir Louis Mallet	1,289,000,000
In 1883 Prof. Leone Levi	1,274,000,000
In 1885 Prof. Arthur Marshall	1,125,000,000
In 1904 Chiozza Money	1,710,000,000
In 1904 A. L. Bowley	1,800,000,000
In 1907 <i>Census of Production</i>	2,000,000,000

In 1913-1914 the income of the British people came probably to £2,500,000,000. It has doubled in thirty years.

For the purpose of this chapter it is idle to inquire how far the increase in the wealth and income of the British nation is due to increased population and to increased production, and how far it is due to the declining value of the currency. The chief point is to establish that wealth and income, as measured in money, have a tendency to increase continually and very rapidly. The new War Debt is a money debt. It has to be settled by

money payments. It will be paid off in the same way in which the British war debts have been paid off in the past, and the repayment will be greatly facilitated by the progressive increase of wealth and income, and by the equally progressive depreciation of the currency which should take place in the future and with which we may calculate.

The vastly increased ability of the British people to pay increased taxes may be seen from the following most remarkable and most noteworthy figures:

British Tax Revenue in 1815 ..	£	72,210,512
" , 1917-1918 ..	£	707,234,565

In 1792, when the great war with France began, the British Tax Revenue amounted to £19,258,814. It was more than trebled in the course of the struggle. It reached its maximum in 1815. The raising of £72,210,512 seemed to the British tax-payers of the time the maximum effort possible. In 1917-1918 the United Kingdom raised by means of taxes practically ten times as much as it had raised in 1815. During a century Britain's financial strength has grown tenfold, partly through increased production and partly through the depreciation of the currency. It is quite conceivable that during the next hundred years the real and fictitious wealth of Great Britain may expand as fast as it has done during the preceding century. If that should be the case, the United Kingdom may in the year 2017 have a national wealth of £150,000,000,000, a yearly income of £25,000,000,000, and may be able, in case of need, to provide in a single year a revenue of £7,000,000,000. The cost of the War, however great, may appear as trifling to the grandchildren and great-grandchildren of the present generation as the cost of the Napoleonic War, which appalled the generation of Waterloo, appears to us now.

The fact that Great Britain's income and wealth can very rapidly and very greatly be increased scarcely needs proving. In a manufacturing country, the progress of wealth and of income depends upon production. I have shown in a recently published book,* by means of the most reliable official figures available, that the American workers employed in the manufacturing industries produced per head before the War about three times as much as their British colleagues engaged in the identical callings, largely because they employed per thousand men three times as much engine-power. American labour engaged in mining, in agriculture, and in transport also is approximately three times as efficient as is British labour. It follows that the United Kingdom can treble its wealth and income by Americanising its industries, that it thereby can increase its wealth from £15,000,000,000 to £45,000,000,000, and its yearly income from £2,500,000,000 to £7,500,000,000. The process of Americanising the British industries has already begun, as I have pointed out in another chapter of the book mentioned. The country is therefore at present considerably richer than it was before the War, and herein lies the reason that the taxpayers have been able to provide easily the gigantic sums needed for financing the War.

Those who pessimistically compare Britain's War Debt with its so-called national wealth of £15,000,000,000 should remember that a country's wealth is not fixed for all time, but is susceptible of indefinite expansion, and they should endeavour to gauge the value of some of the country's latent resources. The United Kingdom possesses, for instance, as we have seen, approximately 200,000,000,000 tons of coal, which alone are worth £100,000,000,000 at the pit's mouth. In reality the coal

* "The Great Problems of British Statesmanship." John Murray, London, 1917.

of the nation is worth far more than £100,000,000,000. With ten shillings' worth of coal may be produced several pounds' worth of cotton goods or of dyes or of chemicals. Earths which are worthless in themselves may be converted into aluminium, buildings, ships, or the most precious porcelains. We have only begun to exploit the riches of the world. We may soon succeed in harnessing the tides. The economic possibilities of the future are unlimited.

The development of a nation's wealth depends upon the exploitation of the forces of Nature by man. Two acres should produce more wheat than a single one. Two men should produce more value than a single man. A man employing powerful machinery may produce as much wealth as a hundred men who work with their hands. The development of national wealth depends mainly on four factors: on the extent of the national territory, on the natural resources, on the number of the inhabitants, and on the efficiency of citizens. The limited area of the United Kingdom contains only a limited quantity of natural riches. Therefore it can nourish only a limited number of people and produce only a limited amount of wealth. The expansion of Britain's wealth and population is circumscribed by the narrowness of the national territory. The outlying portions of the Empire are more than a hundred times as large as the British Isles. They contain vast resources of every kind which await man's exploitation. The Continent of Australia contains fewer people than London. Canada, Australia, and South Africa will gradually fill up. The population and the wealth of the Dominions and Colonies should grow much faster than the population and wealth of the Motherland. Before very long the daughter-States should exceed the Motherland both in white population and in wealth. They will therefore be better able to assume a large

portion of the War Debt than they are at present, and they will undoubtedly be found ready to shoulder their share of the burden, for the War has been fought not only for Great Britain, but for the British Empire and the British race. Let us therefore endeavour to cast a glance into the Empire's future.

As the statistics relating to the Empire are rather fragmentary, and as comprehensive British Imperial statistics scarcely exist, I would illustrate the probable, or at least the possible, development of the British Empire in power and wealth by means of the excellent statistics relating to the United States. The United States have furnished a brilliant example of successful development to the British daughter-States, and they have provided us with the necessary exact statistical information. They were the first great country which published exhaustive censuses of population, of wealth, etc. The first American census of population was taken in 1790. Data for the preceding decades have been given by the American Census Bureau in a special Report entitled *A Century of Population Growth*, published in 1909. We learn from these official sources that the population of the United States has increased as follows:

POPULATION OF THE UNITED STATES.

1610	..	..	210	1770	..	..	2,205,000
1620	..	..	2,499	1780	..	..	2,781,000
1630	..	..	5,700	1790	..	..	3,929,625
1640	..	..	27,947	1800	..	..	5,308,483
1650	..	..	51,700	1810	..	..	7,238,881
1660	..	..	84,800	1820	..	..	9,638,453
1670	..	..	114,500	1830	..	..	12,866,020
1680	..	..	155,600	1840	..	..	17,069,453
1690	..	..	213,500	1850	..	..	23,191,876
1700	..	..	275,000	1860	..	..	31,443,321
1710	..	..	357,500	1870	..	..	38,558,371
1720	..	..	474,388	1880	..	..	50,155,783
1730	..	..	654,950	1890	..	..	62,947,714
1740	..	..	889,000	1900	..	..	75,994,575
1750	..	..	1,207,000	1910	..	..	92,174,515
1760	..	..	1,610,000	1912	..	..	95,410,503

The growth of the population of the United States has been most remarkable, but the growth of the wealth of the people has been even more wonderful. In 1790 the slender wealth of the United States was, according to the Government Report mentioned, composed as follows:

	Dols.
Land and buildings	317,767,000
Slaves	164,642,600
Live stock and all other property	190,000,000
Total	1,000,000 552,410,600

In 1790 Great Britain was about fifteen times as rich as were the United States. Now the United States are more than twice as rich as is the United Kingdom. Since 1790 the wealth of the United States has increased at a prodigious rate. It has increased much faster than the population. Detailed American censuses relating to the wealth of the inhabitants have been published since 1850. The following table shows that the wealth of the American people has increased infinitely faster than has their number:

Year.	Inhabitants.	Wealth.	Wealth per Head.
		Dols.	Dols.
1790	3,929,625	552,410,600	140.57
1850	23,191,876	7,135,780,000	307.69
1860	31,443,321	16,159,616,000	513.93
1870	38,558,371	30,068,518,000	779.83
1880	50,155,783	43,642,000,000	870.20
1890	62,947,714	65,037,091,000	1,035.57
1900	75,994,575	88,517,307,000	1,164.79
1904	82,466,551	107,104,212,000	1,318.11
1912	95,410,503	187,739,071,090	1,965.00

Between 1790 and 1912 the population of the United States has grown twenty-fourfold and their wealth three hundred and fortyfold. Hence the wealth per head of

population has increased fourteenfold. As in the meantime the value of the dollar has decreased to one-half, the real wealth per head has increased approximately sevenfold. Between 1850 and 1912 the population of the United States has increased fourfold and their wealth no less than twenty-sixfold, while the wealth per head of population has increased six and a half-fold.

The wealth of the United States is very unequally distributed by States, and has expanded in a very unequal manner. It is highly significant that the richest American States are those of the North, which, comparatively, have a poor soil and a rigorous climate, but which are rich in coal and iron and are geographically most favourably situated for the successful pursuit of manufacturing and commerce. The States of New York, Pennsylvania, and Illinois, which together have less than one-thirtieth of the national territory, possess almost exactly one-third of the national wealth, because in these States the use of labour-saving machinery has been brought to the very highest perfection. On the other hand, the cotton, sugar, and tobacco producing semi-tropical States of the South, which have the richest soil and the gentlest climate, but in which labour-saving machinery is comparatively little employed and the manufacturing industries are little developed, are among the poorest States of the Union, and their wealth is growing comparatively slowly. Between 1850 and 1912 the wealth of New York State has grown twenty-fivefold, that of Pennsylvania twenty-twofold, and that of Illinois one hundredfold. On the other hand, the wealth of Louisiana, Alabama, and Tennessee has grown only ninefold, and that of Virginia only sixfold. In the past, before the age of coal and iron, Virginia was the most populous and the wealthiest State of the Union. It occupied a position of pre-eminence similar to that which is now held by New York.

Vast, thinly settled, and apparently worthless territories may become exceedingly wealthy and populous by the advance of civilisation. This fact is well illustrated by the history of the United States and of Canada. In 1763, when France lost Canada to Great Britain, the country had only 65,000 white inhabitants, and Voltaire jestingly expressed his surprise that two great nations should fight one another "pour quelques arpents de neige." Voltaire could, of course, not foresee that steam and steel would abolish distance, that Canada would become a great nation which in a couple of centuries might exceed France in population and wealth. Canada contains seventy times as much coal as France, and considerably more coal than all Europe. That resource alone ensures the future greatness and prosperity of the country.

The purchase of Louisiana by the United States is one of the greatest romances of history. In 1803 Napoleon urgently required funds for carrying on the government, and he was reluctant to increase existing taxation. At that time the great colony of Louisiana belonged to France. The town of New Orleans, on the Mississippi River, formed part of that colony. It was the great port of the Mississippi Valley. As the American trade which flowed up and down the Mississippi was being impeded and obstructed at New Orleans, the United States wished to purchase that town from France. Mr. James Monroe, who later on became President and promulgated the celebrated doctrine which bears his name, was sent to France, and was authorised to buy New Orleans for \$2,000,000, acting in conjunction with the American Ambassador, Mr. Livingston. In 1803 Louisiana was inhabited by about 100,000 people, of whom only 50,000 were whites, the rest were negroes and half-castes. The actual and prospective value of the colony was considered

by many to be insignificant. Its chief value was supposed to consist in the harbour and town of New Orleans.

When Napoleon was offered \$2,000,000 for New Orleans he refused, but he declared to Marbois, his Minister of Finance, that he would sell to the United States the whole of Louisiana for 100,000,000 francs or £4,000,000. That seemed a colossal sum for an uninhabited waste. Marbois discussed Napoleon's offer in a friendly manner with Mr. Livingston, the American Ambassador. The latter reported to his Government the gist of the conversation in a despatch, dated April 13, 1803, which may be found in the collected American State Papers. Livingston wrote:

Seeing by my looks that I was surprised at so extravagant a demand, he (Marbois) added that he considered the demand as exorbitant, and had told Napoleon that the thing was impossible. . . . I (Livingston) told him that we had no sort of authority to go to a sum that bore any proportion to what he mentioned; but that, as he himself considered the demand as too high, he would oblige me by telling me what he thought would be reasonable. Marbois replied that, if we would name 60,000,000 francs and take upon us the American claims to the amount of 20,000,000 francs more, he would try how far this would be accepted.

On April 30 Monroe and Livingston signed, on their own responsibility, a treaty whereby France ceded to the United States Louisiana against the payment of 60,000,000 francs. The two American representatives reported their unauthorised action to the Secretary of State, Mr. Madison, in a letter dated May 13, in which they tried to justify their action. They stated:

SIR,—We have the pleasure to transmit to you by M. Dericieux a treaty which we have concluded with the French Republic for the purchase and cession of Louisiana. . . . An acquisition of so great an extent

was, we well know, not contemplated by our appointment; but we are persuaded that the circumstances and considerations which induced us to make it will justify us in the measure to our Government and country. . . . The terms on which we have made this acquisition, when compared with the objects obtained by it, will, we flatter ourselves, be deemed advantageous to our country. We have stipulated, as you will see by the treaty and conventions, that the United States shall pay to the French Government sixty millions of francs in stock bearing an interest of six per cent.: and a sum not exceeding twenty millions more to our citizens, in discharge of the debts due to them by France, under the Convention of 1800. . . .

In estimating the real value of this country to the United States a variety of considerations occur, all of which merit due attention. Of these, we have already noticed many of a general nature, to which, however, it may be difficult to fix a precise value. Others present themselves of a nature more definite, to which it will be more practicable to fix some standard. By possessing both banks (of the Mississippi), the whole revenue or duty on imports will accrue to the United States, which must be considerable. The value of the exports, we have understood, was last year four millions of dollars. If a portion only of the imports pass through that channel, as, under our government, we presume they will, the amount of the revenue will be considerable. This will annually increase in proportion as the population and productions in that quarter do. The value of the lands in the province of Louisiana, amounting to some hundred millions of acres, of the best quality, and in the best climate, is, perhaps, incalculable. From either of these sources it is not doubted that the sum stipulated may be raised in time to discharge the debt. . . .

Permit us to express an earnest wish that the President and Senate may decide with the least possible delay on the treaty and conventions which we have concluded, and have the pleasure to transmit you. . . .

The unauthorised conclusion of the Louisiana Purchase Treaty was severely criticised in the United States. In discussing whether it should be ratified or not, some

Senators pointed out that it was unconstitutional. Senator Plumer of New Hampshire considered that the acquisition of Louisiana would be ruinous to the Union, and especially to New England. Senator White of Delaware thought the acquisition would prove a curse to the country, and that the money spent on its purchase was exorbitant. He stated:

If Louisiana should ever be incorporated into the Union, I believe it will be the greatest curse that could at present befall us. It may be productive of innumerable evils. . . . Our citizens will be removed to the immense distance of two or three thousand miles from the capital of the Union, where they will scarcely ever feel the ways of the general government; their affections will become alienated; they will gradually begin to view us as strangers; they will form other commercial connections, and our interests will become distinct . . . and I do say that under existing circumstances, even supposing that this extent of territory was a desirable acquisition, fifteen millions of dollars was a most enormous sum to give.

Louisiana contained not merely "several hundred millions of acres of land of the best quality," as Messrs. Livingston and Monroe had reported, but comprised 875,025 square miles, a territory more than seven times as large as the United Kingdom and considerably larger than that of the original thirteen colonies. By the payment of a paltry 15,000,000 dollars the United States more than doubled their territory. Old Louisiana consisted of the lands on the west bank of the Mississippi, from the Mexican to the Canadian border, and it included the whole of the Missouri River system. Out of the gigantic territory purchased were carved the States of Arkansas, Colorado, Iowa, Kansas, Louisiana, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, Oklahoma, Wyoming, and the Indian Territory.

According to the United States Government Report, *Territorial and Commercial Expansion of the United States*,

published in 1904, the Louisiana territory produced, in 1903, 60 per cent. of the wheat raised in the United States, over 43 per cent. of the maize, 42 per cent. of the oats, 30 per cent. of the wool, 30,000,000 tons of coal, 16,000,000 tons of iron ore, \$77,500,000 worth of gold and silver, etc. The latent wealth of the country is boundless.

The lands of the Louisiana purchase possess the finest agricultural lands of the United States, and their subsoil is exceedingly rich in minerals of all kinds. The uplands abound in timber. As the Louisiana territory is inhabited by one-fifth of the American population, it is fair to assume that it contains approximately one-fifth of the wealth of the country. At present the wealth of Louisiana should therefore be about £7,500,000,000, and before long it should greatly exceed the wealth of France. In a little more than a century a vast wilderness has been peopled by millions of families, and the capital hesitatingly invested in the purchase price in 1803, which seemed enormous at the time, has been increased more than 3,000-fold, to the vast benefit of the American people. Their foresight and enterprise have been amply rewarded. The story of the Louisiana purchase shows the superior value of real wealth, of natural resources, and especially of land, to money. That fact is keenly appreciated by the British landed aristocracy. It has created its wealth.

It is frequently asserted that America's wonderful progress in population and in wealth is due to the magnificent natural resources of the country. The United States have undoubtedly been singularly favoured by Nature's bounty. Apparently they possess within their frontiers the bulk of the world's coal and iron, as I have endeavoured to point out in the preceding chapter of this book. However, natural resources, even if they are exceedingly great, cannot be converted into wealth

unless they are vigorously exploited by man. Possibly, one ought perhaps to say probably, the British Empire, which has an area four times as large as the United States, and which extends through all climes, possesses far greater natural resources than the United States. Unfortunately, the natural resources of the Empire have not been sufficiently developed by man. Their exploitation has been left to chance, to unrestricted private enterprise, and the worst is that no Imperial stock-taking has ever taken place. Therefore we do not even know what resources the British Empire possesses. It is quite possible that its wealth in coal and iron alone is far greater than that of the United States.

The wonderful growth of the United States in population and wealth is largely due to the energy of the American people and to the solid common-sense and enterprise of their rulers. The American Governments have surveyed, mapped, and classified with the greatest care the natural resources of the country. Their geological surveys, agricultural surveys, water-power surveys, forest surveys, fishery surveys, etc., might, and should, serve as models to the British peoples. In matters economic the Americans have not followed the British policy of drift and neglect, called *laissez faire*, but a far-sighted policy of wise and energetic action.

British economic policy has been powerfully influenced by the teachings of British political economy, which stands by itself. Unfortunately, British political economy is not national. It is unnational, cosmopolitan. Adam Smith, the father of modern British political economy, called his celebrated treatise, *An Inquiry into the Nature and Causes of the Wealth of Nations*, although he almost disregarded the existence of nations. His is not a national, but an individualist, economy. He ought to have called his book, *An Inquiry into the Nature and*

Causes of the Wealth of Individuals. Adam Smith's successors disregarded the existence of States altogether. They spun their unprofitable theories around an abstract "economic man" whose only aim was the pursuit of profit, and who lived in an abstract world-wide commonwealth without national frontiers. However, whereas Adam Smith had at least tried to describe and develop an economy of production and had dwelt on the paramount importance of production, his successors created an economic science which was designed chiefly for the benefit of non-producers, of capitalists, middlemen, and speculators. Modern British political economy not only disregards the existence of nations, but it takes little heed of the interests of the producers. It devotes its attention principally to promoting the interests of capitalists, traders, and other non-producers. The great Ricardo was a stockbroker and a successful speculator. Cobden was an unsuccessful speculator who had twice to be saved from bankruptcy. These two men are the fathers of modern British political economy. Bliss's *Encyclopedia of Social Reform*, an American publication, stated correctly:

Value being taken as the ear-mark of wealth, the Ricardian economics become a theory of acquisition, attention being given to the money-making propensities rather than to productive activity. . . . Archbishop Whately designated the essential interest of the utilitarian economics when he proposed the name "Catalactics"—the science of exchange.

The teachings of the British economists have profoundly affected British policy. For the benefit of the capitalist, the middleman and the speculator, the State was to remain absolutely passive in economic matters. The non-producers were given a free hand. In the sacred name of "economic liberty" they were allowed to

exploit and to destroy the productive industries and the strength of the country. The destruction of the country's political and economic strength and the spoliation and waste of its great natural resources did not matter so long as non-producing capitalists and middlemen flourished. Production was sacrificed to speculation. The unrestricted enterprise of company promoters, usurers, and swindlers of every kind was considered more important than the welfare of the producers who create the national wealth. National strength and security were sacrificed to the unrestricted greed of speculators. The Stock Exchange was considered more important than the great industries. Paper wealth was placed above real wealth. The development of the great Imperial domain was left to chance and to the tender mercies of cosmopolitan financiers, who, under the pretext of developing the Empire, tried to fleece the British investors. No attempt was made by the Government to direct the huge stream of British emigrants towards the empty lands of the Empire, for money was considered more important than men.

While British Governments, following a speculators' policy, neglected the development of the Empire, and disregarded the possibility of increasing its wealth and strength by directing towards the Colonies European emigrants, or at least British emigrants, successive American Governments fostered immigration and production by all means in their power. Between 1820 and 1910 the United States received the immense host of 32,200,594 immigrants. At the census of 1910 the Great Republic contained 13,515,886 people of foreign birth and 32,243,382 people of purely foreign blood. They contained 2,557,080 people born in the United Kingdom and 980,938 born in Canada. In 1910 the British-born population in the United States was almost as large as

that of Australia, while the American population of purely British blood—that is, the British immigrants and their American-born children—numbered 10,490,027, a population as great as that of Scotland, Ireland, and Wales combined. The Report of the American National Conservation Commission estimated the value of an immigrant at \$1,700 or £340. That is probably a great understatement. At that figure the British-born population in the United States would represent a value of more than £1,000,000,000. and the population of purely British blood a value of more than £3,500,000,000. That is a gigantic free gift which might with advantage have been handed over to the British Dominions. It would have vastly increased the strength and wealth of the Empire.

Wealth is created by the exploitation of the resources of Nature by man. While the American people have pursued the policy of increasing their wealth and strength by increasing their population and by fostering national production in all its branches, the British people have unfortunately pursued the policy of encouraging speculation in all its forms and of restricting both population and production. The British manufacturers and their workers, acting like greedy middlemen and scheming speculators, have consistently followed the disastrous policy of creating an artificial scarcity, of restricting output to the utmost, in the hope of obtaining illegitimate profits, and, guided by the views of a well-meaning but fantastic clergyman, who dabbled in political economy, British statesman, politicians, labour leaders, and philanthropists, have striven to create an artificial scarcity of men as well. Cranks and schemers directed the policy of the country. The loss of population by emigration to the United States, was greeted as a relief and as a blessing. Men preached that the easiest way to make a nation prosperous consisted in committing national suicide and

economic suicide, consisted in restricting the birth-rate and restricting national production. The United States have gone far ahead of the British Empire in white population and in wealth, although England had an enormous start, and although the latent resources of the Empire are probably infinitely greater than those of the United States, because British statesmen, British business men, and the British workers have consistently followed the suicidal policy of impeding the increase of the national wealth and of the national strength, of impeding the increase of the population and the increase of national production, have followed an un-national and even an anti-national policy.

Wealth, I repeat, is created by the exploitation of the resources of Nature by man. In economic and military contests success is won by superiority in man-power, by superiority in equipment, and, last but not least, by superiority in leadership. The United States owe the vast increase of their wealth to the rapid increase of their population and to the fact that the American people, guided by men of common sense, have increased the productive power of their citizens to the utmost by the most lavish use of labour-saving machinery of every kind.

The United States owe their rapid progress in wealth and power in the first place to the wonderful development of their railway system, whereby the Great Republic has been opened up in all directions. The American railway system has grown as follows:

UNITED STATES RAILWAY MILEAGE.

<i>Year.</i>						<i>Miles.</i>
1850	..	..	..	..	..	9,021
1860	..	..	..	..	..	30,626
1870	..	..	..	..	..	52,922
1880	..	..	..	..	..	93,267
1890	..	..	..	..	..	167,191
1900	..	..	..	..	..	198,964
1910	..	..	..	..	..	249,992

The United States have the most wonderful system of railways. Their mileage is far greater than that of all Europe, which in 1910 had only 207,432 miles of railway. All Europe, with 458,795,000 inhabitants, has actually fewer miles of railway than have the United States. The Great Republic possesses 40 per cent. of the railway mileage of the world. It is a humiliating fact that the length of its railways is considerably greater than that of the British Empire, the area of which is four times as great as that of the United States.

The United States have not only the greatest railway system in the world, but the American railways are the most efficient railways existing. They pay the highest wages in the world. Yet their freight charges are among the lowest in the world. Free competition, coupled with adequate official supervision and guidance, has given to the United States an excellent railway system, a uniformity of outfit and facilities for handling traffic at the cheapest freight rates. Unrestricted private enterprise, the unrestricted control of railways by greedy speculators, has given to Great Britain the most costly and perhaps the least efficient railway system in the world, with monstrously high freights. The British railways have been run, not for the benefit of the country, but for that of company promoters, railway directors, stock-speculators, and shareholders, while national production has been hampered and restricted by the exorbitant freight rates and the anti-national freight policy pursued by the railways.

The United States possess the most prosperous and the most progressive agriculture, not so much owing to the natural wealth of the country as to the energy and enterprise of the American people. The nature and the causes of the progress of America's agriculture may be seen from the following table:

<i>Number of Farms.</i>	<i>Value of Farms.</i>	<i>Number of Cattle.</i>	<i>Number of Horses.</i>	<i>Value of Agricultural Machinery Employed.</i>
	<i>Dols.</i>			<i>Dols.</i>
1850 | 1,449,073	3,967,343,580	17,778,907	4,336,719	151,587,638
1860 | 2,044,077	7,980,493,063	25,616,019	6,249,174	246,118,141
1870 | 2,650,985	8,944,857,749	25,484,100	8,249,000	270,913,678
1880 | 4,008,907	12,180,501,538	33,258,000	11,202,000	406,520,055
1890 | 4,564,641	16,082,267,689	52,801,907	14,214,000	494,247,467
1900 | 5,737,372	20,439,901,164	43,902,414	13,538,000	749,775,970
1910 | 6,361,502	40,991,449,090	69,080,000	21,040,000	1,265,149,783

Between 1850 and 1910 the number of American farms has increased a little more than fourfold, while their value has grown more than tenfold. Vast improvements have taken place throughout the agricultural districts. The number of cattle has increased almost fourfold and that of horses almost fivefold. The principal reason for the increase in the value of the farms lies, of course, in the vast increase of the American crops, which increase is due principally to the general use of the most powerful labour-saving machinery. It will be noticed that between 1850 and 1910 the value of agricultural machinery has increased eightfold. As the price of agricultural machinery has rapidly fallen during the period, it follows that the quantity of agricultural machinery used has increased far more than eightfold. It is also worth noting that the produce per acre has steadily been rising through the continuous improvement in cultivation.

Although the United States have a most flourishing and a most prosperous agriculture, they have not neglected their manufacturing industries. Agriculture and manufacturing have been simultaneously promoted, as the following comparative figures will show:

		<i>Value of Manufactures.</i>	<i>Value of Agri- cultural Produce</i>
			<i>Dols.</i>
1850	.. ..	1,019,106,616	1
1860	.. ..	1,885,861,676	1
1870	.. ..	4,232,325,442	1,958,630,927
1880	.. ..	5,269,579,191	2,212,540,927
1890	.. ..	9,372,378,843	2,430,107,454
1900	.. ..	11,406,926,701	4,717,069,973
1910	.. ..	20,672,051,870	8,498,311,413
1915	.. ..	24,246,434,724	13,449,310,000

It will be noticed that agricultural production and the production of manufactures has increased enormously. The progress of the two has been approximately equally great. To many the United States are still principally an agricultural country. In reality the principal wealth of the United States is now derived from manufacturing. In 1915 the wholesale value of manufactured goods produced was \$24,246,434,724, which is equal to £4,849,286,945. In 1907 the total income of the United Kingdom was £2,000,000,000, according to the British *Census of Production*. It follows that by manufacturing alone the United States derive an income which is considerably more than twice as great as the British income derived from manufacturing and all other sources combined. It is therefore clear that in manufacturing the United States are far ahead of the United Kingdom. Nevertheless, there are party politicians and economists of the *laissez faire* school who assert that England is the richest country in the world, that she is still the workshop of the world, and that she is the foremost country in manufacturing. They point proudly to her paper wealth, such as her clearing-house returns, her discount rate, the price of her Consols, her foreign investments, etc.

The marvellous advance in manufacturing in the United States, like America's wonderful advance in agri-

culture, is due to the most lavish use of the most perfect machinery whereby the productive power of men can be increased indefinitely. The engine-power used in the American manufacturing industries has increased in the following remarkable manner:

	<i>Horse-Power.</i>				
In 1870	2,346,142
In 1880	3,410,837
In 1890	5,938,635
In 1900	10,097,893
In 1905	13,487,707
In 1910	18,675,876
In 1915	22,547,574

Since 1870 the engine-power employed in manufacturing has increased almost tenfold. It almost doubled between 1880 and 1890 and between 1900 and 1910. The employment of electrical machinery shows the following tremendous progress:

	<i>Horse-Power.</i>				
In 1890	15,569
In 1900	492,936
In 1905	1,592,475
In 1910	4,817,140
In 1915	8,847,622

Unfortunately, no comparisons can be instituted between the mechanical outfit of the British and the American manufacturing industries, or between the values produced in agriculture and manufacturing in the two countries, for the excellent reason that England possesses no statistics relating to these subjects. Exact information regarding the position and progress of the British industries, the charges of the railways, etc., is wanting. The most necessary and the most indispensable information required by the statesman, the administrator, and the business man cannot be obtained, because the body economic stands under the influence of the

speculator and the middleman, who does not require exact information, and whose principal aim it is to snatch a profit at the cost of the producers or of the consumers, or of both, by rigging the market, by cornering supplies, and especially by creating an artificial scarcity. For the efficient conduct of the national business complete statistics are as indispensable as is careful book-keeping for the efficient conduct of any private business. Gamblers and punters require, of course, no exact data. When careful observers pointed out that the British industries had become stagnant and were relatively declining, that agriculture was being destroyed, that the British iron and steel industry was falling from the first rank to the second and then to the third rank in the world, they were told that the United Kingdom was still the foremost industrial country in the world, and that assertion was "proved" by the figures of Britain's foreign trade, as if foreign trade were synonymous with production. In the absence of exact statistical information, the disastrous effect of mistaking paper wealth for real wealth, of allowing great industries—such as agriculture—to decay, of encouraging speculation and discouraging production, of restricting the population, of antagonising machinery, and of limiting to the utmost the output of commodities, was discovered only when Great Britain and the British Empire had lost their former industrial pre-eminence, when the disastrous effect of the policy pursued could no longer be hidden or be explained away.

The United States will certainly continue the policy of encouraging population and production which they have followed hitherto with such brilliant success. Hence the future prospects of the Great Republic are exceedingly bright. In the Report of the National Conservation Commission of 1909 a cautious estimate of the future

growth of the American population, based upon its past increase, was made. It was as follows:

UNITED STATES POPULATION.*

<i>Year.</i>	<i>Population.</i>	<i>Increase.</i>	<i>Rate of Increase.</i>
			<i>Per Cent.</i>
1790	3,929,000	—	—
1800	5,308,000	1,379,000	35
1810	7,240,000	1,931,000	36
1820	9,638,000	2,399,000	33
1830	12,866,000	3,228,000	33
1840	17,069,000	4,203,000	33
1850	23,192,000	6,122,000	36
1860	31,443,000	8,251,000	36
1870	38,558,000	7,115,000	23
1880	50,156,000	11,597,000	30
1890	62,622,000	12,466,000	25
1900	75,569,000	12,946,000	21
1910	90,000,000	14,431,000	21
1920	104,000,000	14,000,000	16
1930	119,000,000	15,000,000	14
1940	134,000,000	15,000,000	13
1950	150,000,000	16,000,000	12
1960	167,000,000	17,000,000	10
1970	184,000,000	17,000,000	10
1980	202,000,000	18,000,000	10
1990	225,000,000	23,000,000	11
2000	249,000,000	24,000,000	11
2010	274,000,000	25,000,000	10
2020	299,000,000	25,000,000	9
2030	325,000,000	26,000,000	9
2040	350,000,000	25,000,000	8
2050	375,000,000	25,000,000	7
2060	400,000,000	25,000,000	7
2070	425,000,000	25,000,000	6
2080	450,000,000	25,000,000	6
2090	475,000,000	25,000,000	5
2100	500,000,000	25,000,000	5

Even if the increase of the population should continue slackening, as it did between 1790 and 1900, the population of the United States should come to 249,000,000 in the year 2000, and to 500,000,000 in the year 2100. If

wealth per head should during that period remain absolutely stationary, the United States would have in the year 2000 a national wealth of £93,700,000,000, and in the year 2100 a national wealth of £187,500,000,000. However, as wealth per head has increased fourteen-fold between 1790 and 1912, it is fair to assume that it will grow tenfold in each of the succeeding centuries, partly through the progressive increase in men's productive power, partly through the continued depreciation of the currency. Hence the national wealth of the United States may amount to the almost unimaginable sum of £930,700,000,000 in the year 2000, and to £18,600,000,000,000 in the year 2100. The latter sum would be a thousand times as large as the present wealth of the United Kingdom.

The British Empire, spreading over all continents and climes, is four times as large as the United States. It can nourish a far greater white population than the United States, and it has probably greater latent resources of every kind. If a wise policy of encouraging population and production should be pursued, the British Empire ought, a century hence, and two centuries hence, at least to equal the United States in population, production, and wealth. To a population of 250,000,000 white men, possessing sixty times as much property as the present national wealth of the United Kingdom, and to a population of 500,000,000 men possessing property worth a thousand times as much as the present national wealth of the United Kingdom, the few thousand million pounds which the War may cost will appear a ridiculous trifle. It will appear as ridiculous to the people then living as appears to the present generation the national wealth of Great Britain in the time of Charles II., which then amounted to £250,000,000. The cost of the War, however great it may be, even if eventually it should vastly

exceed the so-called national wealth of Great Britain, is a trifle compared with Britain's possible and probable future wealth. It can easily be borne by future generations. It will scarcely be felt in a decade or two, if the Empire emerges victorious from the struggle, and if its boundless resources are utilised to the full by the policy of encouraging the increase of population and of production. How this may be done will be shown in a subsequent chapter. The United States have shown Britain the way. If, on the other hand, Great Britain should be defeated, Germany would undoubtedly endeavour to prevent the rise of a dangerous competitor and opponent by breaking up the United Kingdom and the British Empire, and by depriving the British race of those essential natural resources upon which depend its future greatness, strength, and prosperity.

The expansibility of the British national revenue is practically unlimited. That may be seen by its continuous and gigantic increase in the past. According to Sir John Sinclair's excellent book, *The History of the Public Revenue*, published in 1803, it has grown as follows up to 1800:

BRITISH GOVERNMENT REVENUE.

		£
In the time of Queen Elizabeth	..	500,000
" James I.	..	600,000
" Charles I.	..	895,819
" The Commonwealth	..	1,517,247
" Charles II.	..	1,800,000
" James II.	..	2,001,855
" William III.	..	3,895,205
" Queen Anne	..	5,691,803
" George I.	..	6,762,643
" George II.	..	8,522,540
" George III. (1760)	..	15,572,971
" " (1800)	..	36,728,000

In 1913-1914 the British revenue was £199,011,000, in 1917-1918 it was £707,234,565, and it should, according

to Mr. Bonar Law's Budget estimate, amount to £842,050,000 in 1918-1919.

The steady and enormous increase of the public revenue premises to continue in the future unless the Anglo-Saxon race should be defeated in the present War, unless the British Empire and the United States should go under. Britain's financial record of the past and the promise of the future should give courage to the short-sighted and faint-hearted few who, considering money more precious than life, advocate that Great Britain should make peace to avoid national bankruptcy, who see in defeat the lesser evil, who urge upon her to commit national suicide, and who are at pains to discover a formula wherewith to disguise Britain's surrender. Perhaps these pages will alter their views. At any rate, they show that the United Kingdom is like a mine of vast unexplored wealth and of infinite promise, the scientific exploitation of which has scarcely begun, and that the riches of the British Empire are gigantic beyond all conception, and are absolutely unfathomable.

CHAPTER IV

THE INEFFICIENCY OF THE BRITISH TRANSPORT SYSTEM AND OF BRITISH AGRICULTURE— SOME LESSONS FROM AMERICA*

IN the previous chapter I endeavoured to show that the cost of the War, even if it should eventually exceed what is erroneously called Britain's national wealth, is a matter of secondary importance, provided the struggle be brought to a victorious end; that the latent resources of Motherland and Empire are practically boundless; that the wealth of the Empire should grow in the future about as rapidly as it has done in the past, owing to the increase of the population, the increase of the productive capacity of man, and the shrinkage in the value of the currency with which we may calculate; that the wealth and the taxable capacity of Great Britain have increased about tenfold since 1815, and may increase once more tenfold during the coming century; that the wealth of the United States has grown three hundred and fortyfold since 1790 and twenty-six-fold since 1850, and is now far greater than that of the British Empire; that, if the British Empire should be vigorously developed in accordance with the methods employed by the United States, the wealth of the Empire should in the year 2000 be about sixty times as great as the present wealth of the United Kingdom, and should in the year 2100 be a thousand times as great as the present wealth of the United King-

* From *The Nineteenth Century and After*, July, 1918.

dom; that therefore a hundred years hence the cost of the War with Germany may appear as small as that of the Napoleonic War appears to the present generation. Economic progress similar to that effected by America can be expected only if American economic methods are employed, if inefficient traditional methods are abandoned. Let us therefore inquire a little more closely into the causes of America's vast wealth and unparalleled material progress.

Wealth is created by the exploitation of the resources of Nature by man. It follows that the increase of the wealth of a nation which is endowed with great natural resources depends mainly upon two factors: upon the number of the productively employed and upon the productive efficiency of the workers.

Man is a labour-saving animal. In the course of ages he has increased his small natural strength, first by using rough tools made of wood and stone, then by taming animals and causing them to work for him, and lastly by inventing labour-saving machinery driven by water-power, steam and electrical power, by the use of which the strength and efficiency of a single worker can be increased a thousandfold. Civilisation is based upon the use of power, and it may be divided into three ages: the age of man-power, the age of animal-power, and the age of engine-power. The last age commenced only yesterday. Man's power may be increased indefinitely by the use of automatic and semi-automatic machinery, and by the discovery and employment of new sources of power such as the tides of the sea, the rays of the sun, and other forces yet undreamt of. Hence the full development of human productivity and of human wealth has only begun.

The Americans have recognised that the wealth and strength of a nation can best be increased by increasing the number of the workers and by enlarging their pro-

ductive capacity to the utmost extent by providing them with the most powerful and the most perfect labour-saving devices of every kind. Herein lies the cause of America's astonishing advance in power, population and opulence.

THE DEVELOPMENT OF RAILWAYS AND WATERWAYS

The strength and wealth of a great country can best be increased by opening it up to exploitation, by abolishing the distances which separate men, by facilitating to the utmost human intercourse and the exchange of human productions. The greatness and power of the Roman Empire were based upon its wonderful system of roads, which were built regardless of labour and expense. The greatness and power of the United States are based upon their magnificent railway system, the mileage of which is far greater than that possessed by the whole Continent of Europe, and far greater than that of the entire British Empire. Let us therefore first consider what Great Britain and the British Empire may learn from the American railways.

The important and the predominant position occupied by the railways in the economy of the United States may be seen from the following extraordinary figures, which are taken from the official Census of Wealth of the United States and which relate to the year 1912:

	<i>Dols.</i>
Value of the railways and their equipment	16,148,532,502
Value of manufacturing machinery, tools and implements	6,091,451,274
Value of farm implements and machinery ..	1,368,224,548

The manufacturing and the agricultural industries of the United States possess the most powerful, the most perfect and the most costly outfit in the world. Yet the value of the American railways, exclusive of the street

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railways, is considerably more than twice as great as that of all the industrial and agricultural machinery in the country. The wealth represented by the American railways is approximately as great as the entire present wealth of the kingdom of Italy.

The paramount importance of the American railway industry may furthermore be gauged by comparing the man-power employed by the railways with that employed by the two largest groups of American manufactures:

WORKERS EMPLOYED IN 1914.

	Workers.
By the United States railways	1,710,296
By all the textile industries	1,498,664
By the making of iron and steel and their products	1,061,058

America is the land of progress. The railway system of the United States is gigantic in size, and is a model and a monument of human competence and of ever-progressive efficiency. Industrial progress consists in increasing man's power over Nature by means of labour-saving devices of every kind. The increased efficiency of the American railways during recent years may be gauged from the following comparative data:

<i>Year.</i>	<i>Miles of Line.</i>	<i>Employees.</i>	<i>Tons Carried.</i>
1890	167,191	749,301	631,740,036
1895	184,628	785,034	686,614,778
1900	198,964	1,017,653	1,081,983,301
1905	225,196	1,382,196	1,427,731,905
1910	249,992	1,699,420	1,849,900,101
1913	251,984	1,815,239	2,058,035,487

Between 1890 and 1913 the mileage of the United States railways has increased by 50 per cent., that of the men employed by them has increased by 142 per cent.,

and that of the tons of goods carried by no less than £30 per cent. On the American railways were handled, in 1890, 843 tons of goods per employee per year. In 1913 there were handled 1133 tons of goods per employee per year. Notwithstanding the considerable shortening of the hours of labour during the period under consideration, the quantity of goods handled per man was increased by nearly 40 per cent., not because the men had to work harder, but because of the vast improvements made in the organisation and in the mechanical outfit of the railways. Vast labour-saving reforms were effected and the most perfect labour-saving appliances were introduced. The advance made with regard to the mechanical outfit of the railways in some directions can easily be summarised statistically.

<i>Year.</i>	<i>No. of Locomotives.</i>	<i>No. of Railway Cars.</i>	<i>Tons of Goods Carried.</i>
1895	35,699	1,270,561	686,614,778
1900	37,663	1,450,838	1,081,983,301
1905	48,357	1,842,871	1,427,731,905
1910	58,947	2,290,331	1,849,900,101
1913	63,378	2,445,508	2,058,035,487

Between 1895 and 1913 the number of locomotives and of railroad cars was less than doubled, but during the same period the weight of goods carried by the railways was more than trebled. It follows that the hauling energy of the average engine and the carrying capacity of the average railway wagon was increased by considerably more than 50 per cent. It therefore becomes clear that during recent years not only the efficiency of the average railway worker, but also that of the average engine and truck has been vastly augmented.

The extraordinary and unceasing improvement which has been effected in the outfit of the American railways will become still clearer from the following most interesting table:

Year.	Average Tractive Power of Single Expansion Locomotives.	Average Weight of Single Expansion Locomotives.	Average Carrying Capacity of -				
	Lbs.	Tons.	Box Cars.	Coal Cars.	Flat Cars.	Stock Cars.	All Cars.
1903	21,156	46	28	33	27	25	29
1905	23,178	51	29	34	28	26	31
1907	25,439	56	31	38	31	29	34
1909	26,300	58	32	40	32	29	35
1911	27,771	61	34	42	33	30	37
1913	29,595	65	34	44	35	31	38

In 1913 there were in the United States 60,131 single expansion locomotives. They formed 95 per cent. of all the locomotive engines existing. It will be noticed that in the short space of time between 1903 and 1913 the weight and the tractive power of the average locomotive engine have been increased by 40 per cent. During the same period the average four-cylinder compound engine has increased in weight from 70 tons to 107 tons, with a similar increase in hauling capacity. In order to cheapen transport, larger and ever larger engines are being built. The most powerful locomotive made by the Baldwin Works in 1914 weighed 426·5 tons and hauled 251 huge 50-ton cars fully loaded. They formed a train which was 4½ miles long. It represented a dead-weight of 17,912 tons, while the actual load weighed 12,550 tons. Scientific railroading has only begun.

The improvement made in the cars for carrying goods was as striking as that of the locomotives. Between 1903 and 1913 the carrying capacity of the average box

car grew from 28 tons to 34 tons, that of the average coal car from 33 tons to 42 tons, that of the average flat car from 27 tons to 35 tons, that of the average live-stock car from 25 tons to 31 tons, and that of all cars from 29 to 38 tons.¹ America knows no standstill. It will be noticed that year by year, without exception, the size of the average locomotive and of the average car has been increasing.

While the average car on the United States railways carries now about 40 tons—vast numbers of coal and ore cars carry from 80 to 100 tons each—the British railways still employ ridiculous little trucks carrying 4, 5, 8 or 10 tons, exactly as they did in the time of George Stephenson, and much time is wasted in adjusting tarpaulins. A truck constructed to carry more than 10 tons is a rarity on the British railways. Unfortunately, no exact British statistics similar to the American ones can be published, because these are not accessible. There is, of course, a great economy in using large cars. A shunter can handle as easily a large car as a small one. If the British railways employ five small cars instead of one large one, they have to employ five times as many men for shunting, book-keeping, repairing, etc., and have to spend five times as much money for these services. Besides, there is, of course, a greater percentage of dead-weight in five small cars than in a single large one.

By increasing from year to year the power of the locomotive engines and the size of the cars, and by effecting vast improvements in the permanent way, such as providing heavier rails, abolishing gradients and curves, strengthening bridges, widening cuttings and tunnels, etc., the Americans have been able to increase the average weight carried per train in the most extraordinary manner, as is proved by the following official figures:

AVERAGE NUMBER OF TONS CARRIED PER TRAIN.

	Tons.
In 1890 ..	177.42
In 1895 ..	189.69
In 1900 ..	270.86
In 1905 ..	322.26
In 1910 ..	380.38
In 1913 ..	445.43

The foregoing are merely average figures. Unfortunately, no similar figures are available for Great Britain, although such figures are necessary to ensure efficiency. The average British train-load amounts probably only to about 100 tons. A load of 150 tons is considered a heavy one on an average. Occasionally one sees mineral trains which carry 600 tons of coal with the help of two panting engines, but that sight is a rare one. To carry large quantities of goods by means of toy-engines, toy-trucks and toy-trains is an appalling waste of man-power. It is as wasteful a proceeding as it would be to remove the contents of a house, not in a roomy pantrycon, but by means of twenty cabs. The inefficiency of the British railways causes an extraordinary waste of man-power, coal, money, etc., and is a source of endless annoyance and delay.

While in 1913 the average American train-load was 455.43 tons against an English average load of perhaps 100 tons, large numbers of coal trains, ore trains, and mixed goods trains may be seen any day in the United States which carry 3,000, 4,000 and more tons with the help of a single engine. In the nineteenth volume of the Report of the United States Industrial Commission of 1902 we read:

The Illinois Central, for its low grade and long haul to the Gulf, has recently constructed locomotives capable of hauling 2,000 tons of net paying load. Even this

figure has recently been surpassed by the New York Central, which, with its monster new Mogul engines, is planning to haul eighty loaded 30-ton cars, giving 2,400 tons of revenue freight. From these figures it certainly appears that train-loads for long haul may soon be standardised at not less than 2,000 tons.

That was written in 1902, when the great improvement in freight-carrying had only begun.

During the last few decades railway wages, taxes, and the cost of materials have risen enormously in the United States. Vast sums have been spent by the railways on betterments. Nevertheless, the railways have been able at the same time to lower their rates and to increase their earnings owing to their vast increase in efficiency, whereby their increased expenses have been more than counteracted. This double effect is brought out in the following table:

<i>Year.</i>	<i>Revenue per Ton Mile.</i>	<i>Revenue per Passenger Mile.</i>	<i>Cost of Running Train One Mile.</i>	<i>Freight Revenue per Train Mile.</i>
	<i>Cents.</i>	<i>Cents.</i>	<i>Dols.</i>	<i>Dols.</i>
1890 ..	0.927	2.167	0.96006	1.65434
1895 ..	0.839	2.040	0.93029	1.61190
1900 ..	0.729	2.003	1.07288	2.00042
1905 ..	0.766	1.962	1.32140	2.49689
1910 ..	0.753	1.938	1.48365	2.86218
1913 ..	0.720	2.008	1.70375	3.24347

Between 1890 and 1913 the revenue per passenger per mile has decreased slightly, and that per ton per mile has diminished very considerably. During the same period the cost of running a train one mile and the freight revenue per train mile have almost doubled. The doubled cost of running trains has been balanced by doubling the

freight revenue per train mile. The latter was made possible, notwithstanding the substantial lowering of the freight charges per ton per mile and the vastly increased expenses, because the weight carried per train had been more than doubled in the meantime. Comparisons with England are unfortunately impossible, because the British railways do not provide statistics whereby alone their efficiency can be measured, and which are considered indispensable not only in the United States, but in all civilised countries.

The late Mr. James Hill, the great American railway builder and owner, wrote in his book *Highways of Progress*:

The important element in transportation is the freight rate. The average charge in the United States in 1907 is given by the Inter-State Commerce Commission as 0.759 cent per ton per mile. . . . In Great Britain it is 2.31 cents. . . .

According to the latest reports, the average annual wage of each employee of all the railroads of the German Empire was \$352. The average wage for the same year in Great Britain and Ireland was \$261. In the United States it was \$641. The American railway pays the highest wages in the world, out of the lowest rates in the world, after having set down to capital account the lowest capitalisation per mile of all the great countries of the world. No other occupation and no other employer of labour in the country can match this record.

Of course, the United States could not build and run railways cheaply had they not possessed cheap iron and steel. They were powerfully assisted by the highly efficient American iron and steel industries, which developed mightily under the policy of high protection. After the introduction of high protection iron and steel

production increased enormously, and prices fell rapidly, as will be seen from the following figures:

<i>Year.</i>	<i>Price of Pig Iron.</i>	<i>Price of Steel Rails.</i>
	<i>Dols. per Ton.</i>	<i>Dols. per Ton.</i>
1867	44.08	166.00
1870	33.23	106.79
1880	28.48	67.52
1890	18.41	31.78
1900	19.98	32.29
1910	17.33	28.00
1914	15.24	28.00

The iron and steel trades of America have had high protection, and the makers have combined and formed pools, trusts, etc. According to the doctrines of British political economy these two factors should have made for inefficiency and high prices. In reality they have made for efficiency and low prices.

Although the charges of the American railways have been steadily reduced, the proprietors, the capitalists, have not suffered. They have benefited, because the shrinkage in the charges was more than offset by the economies effected by increased efficiency. Between 1890 and 1913 the capital of the American railways has increased from \$8,984,234,616 to \$19,796,125,712, or has a little more than doubled. During the same period the interest and dividends paid have increased from \$308,571,315 to \$803,830,366, or have nearly trebled, while the dividends alone have increased from \$87,071,613 to \$369,077,546, or have more than quadrupled.

American inland transport has been improved and cheapened, not only by land, but also by water. That may be seen from the following figures:

FREIGHT FOR WHEAT FROM CHICAGO TO NEW YORK PER
BUSHEL.

<i>Year.</i>		<i>By Lake and Canal.</i>	<i>By Railway only.</i>	<i>By Lake and Rail.</i>
		<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
1870 ..	..	17.11	33.30	22.00
1880 ..	..	12.27	19.90	15.70
1890 ..	..	5.85	14.31	8.50
1900 ..	..	4.42	9.98	5.05
1910 ..	..	5.13	9.60	6.57

Although the American railways provide most excellent facilities for the transport of goods at exceedingly low rates, the United States have striven to supplement railway transport by waterway transport, because the latter can be effected more cheaply than the former. Enormous sums have been spent by the national Government and the Governments of the individual States on the improvement of the national waterways and on the construction of canals. Inland transport by water has been made exceedingly efficient and cheap, and the most important waterways, such as the Sault Ste. Marie Canal, have been linked up with the railways, to the vast benefit of the American industries and of the American people.

The development of the American iron and steel industries was greatly hampered by geographical difficulties, which at one time seemed unsurmountable. While in the United Kingdom coal and iron are found side by side, close to the seashore, deposits of these two minerals occur far inland both in Germany and the United States. The difficulty of smelting the iron ore was increased by the fact that both in Germany and the United States the great deposits of iron ore were separated by vast distances from the coal-beds. In Germany and

in the United States the iron ore had therefore to be carried to the coal, or the coal to the iron ore, over such large distances and at so vast an expense that the rise of a prosperous iron industry seemed impossible in both countries. At least that was the view which was taken by many British experts some decades ago. Successful competition on the part of the so greatly hampered iron and steel industries of Germany and of the United States with the so greatly favoured iron and steel industries of Great Britain was possible only if Germany and the United States should succeed in transporting enormous quantities of mineral over huge distances at apparently impossibly low rates. The Preliminary Report of the United States Inland Waterways Commission of 1908 stated:

More than twenty years ago an English student of commercial conditions visited the United States to investigate the outlook of the iron and steel business in this country. On his return home he gave assurances to British iron manufacturers that they need have no serious fears of the competition of the United States, because in America the great iron-ore deposits were too far distant from coal. He was positive it would never be possible to bring the ore to the coal, or the coal to the ore, at such rates as would enable production of iron and steel cheap enough to compete with England.

How completely erroneous was this conclusion need not be suggested now, because everybody is familiar with the marvellous facilities for bringing the Lake Superior ores to the Pittsburg iron district, and with the success of the American iron and steel interests in competing with all the world, despite the initial disadvantages which they had to overcome. Witnesses before the British Royal Commission repeatedly declared that the process of bringing the Lake Superior ores first by rail to the docks on the upper lake, then by Lakes Superior, Huron, and Erie to ports convenient to the coal districts, and finally by rail to the seats of the iron industry, was the

greatest achievement in transportation that the world has seen.

So much for the British iron-makers' error in under-rating the possibilities of internal transportation in the United States. As to Germany, their error was hardly less striking. In the beginnings of the great development of the German iron trade, English iron interests declined to take German competition seriously because the German ore deposits were considered utterly inadequate for the development of a really great industry, and it was presumed that the transportation of great quantities of foreign ore to the seats of the German industries would be so expensive as to make it utterly unprofitable. Yet, in fact, the Germans have developed an iron industry which is now a matter of concern to every competing country, and which is based, like that of the United States, on a system of extremely cheap transportation. While there is a large and increasing production of iron ore in Luxemburg, which is utilised in the German iron industry, and while Germany itself produces a large and growing annual tonnage of ore, and brings still other large amounts from Austria-Hungary, it is nevertheless true that the major part of the iron ore reduced in Germany comes from the Scandinavian peninsula and from Spain. To the canals and canalised rivers of the Empire is due the credit for making it possible thus to bring foreign ores to the German industrial regions. Exceedingly low rates are made, and the tonnage handled by rivers and canals is tremendous.

Thus it appears that in both the United States and Germany the development of the utmost possibilities of cheap inland water communication is entitled to recognition for having made possible the upbuilding of industries which a generation ago seemed economically impossible. With their great supplies of coal and ore located very close together, and with ocean transportation at their door, British manufacturers seemed assured of a domination in the world's iron trade that could only be ended by exhaustion of their supplies of coal and iron. A very different situation has been brought about largely because of the utilisation of internal water transportation in the United States and Germany. . . .

BRITISH TRANSPORT AND AGRICULTURE 85

Development of water transportation has greatly reduced freight charges, induced industrial and commercial development, and contributed vastly to prosperity and wealth.

So firmly is the conviction now established that waterways contribute to national prosperity that those countries in which the Government owns the railroads are foremost in developing waterways. There is thus afforded the curious spectacle of a group of States, having many billions invested in publicly owned railroads, building another system of transportation to compete with the railroads, and turning over this competing system to the substantially free use of the community. More remarkable still is the universal testimony that this policy has paid both in increased railroad profits and in added national prosperity.

Great Britain is the one exception among European industrial countries to the rule of encouraging both rail and water transport. British railroad policy has aimed at the suppression of waterway competition, and has pretty thoroughly succeeded. To-day the British business community finds itself paying higher transportation tolls than continental countries, and because of this fact is at a great and increasing disadvantage in competitive markets.

Professor Taussig of Harvard University described in his book *Some Aspects of the Tariff Question*, published in 1915, the difficulty of bringing the American coal and iron ore together, and the way by which it was triumphantly overcome as follows:

Whether the ore goes to the coal or the coal meets the ore halfway, one or both must travel a long journey, by land as well as by water. One or both must be laden and unladen several times. A carriage of 800, 900, over 1000 miles, must be achieved, with two separate hauls by rail. Fifty years ago, even thirty years ago, it would have seemed impossible to accomplish this on a great scale and with great cheapness. . . .

The history of the American iron trade after 1870 thus

came to be in no small part a history of transportation. The perfecting of transportation has been almost the most remarkable of the mechanical triumphs of the United States. Great as have been the evils of our railway methods, disheartening as have been some of the results of unfettered competition, the efficiency of the railways has been brought to a point not approached elsewhere largely in consequence of that very competition whose ill-effects have been so often and so justly dwelt on. In the carriage of iron ore and of coal, the methods of railway transportation, which had been developed under the stress of eager competition, were utilised to the utmost; and the same was true of the transfer from rail to ship and from ship to rail again, of the carriage in the ship itself, and of the handling of accumulated piles of the two materials.

The ore is loaded on cars at the mines by mechanical appliances. At the Mesabi Mines the very steam-shovel that digs the ore from the ground deposits it in the adjacent car. At the lake high ore-docks protrude hundreds of yards into the water. On top of them run the trains, the ore dropping by gravity from openings in the car bottoms into the pockets of the docks. Thence it drops again through long ducts into the waiting vessels, ranged below alongside the dock. At every step direct manual labour is avoided, and machines and machine-like devices enable huge quantities of ore to be moved at a cost astonishingly low. The vessels themselves, constructed for the service, carry the maximum of cargo for the minimum of expense; while the machinery for rapid loading and unloading reduces to the shortest the non-earning time of lying at the docks. At the other end of the water carriage, especially on Lake Erie, similar highly developed mechanical appliances transfer from boat to railway car again, or, at will, to the piles where stocks are accumulated for the winter months of closed navigation. At either end the railway has been raised to the maximum of efficiency for the rapid and economical carriage of bulky freight. What has been done for grain, for cotton, for lumber, for all the great staples, has been done here also, and here, perhaps, more effectively than anywhere else.

While the greatness and prosperity of the American industries was most powerfully assisted by the cheapness and efficiency of their inland transport system by land and by water, which gives them the priceless boon of the lowest freights in the world, the British railways were, with the connivance of politicians of the *laissez faire* school, allowed to strangle the canals. They destroyed the competition of the British waterways in order to obtain a monopoly of inland transportation. Having obtained that monopoly, they proceeded to charge extortionate freight rates, which are seriously hampering, and which threaten to strangle, the productive industries of the country. Owing to their possessing a monopoly of transportation and owing to the absence of effective Government control, the British railways have scarcely tried to increase their efficiency. They have continually paid for so-called improvements, which should have been made out of earnings, by adding to their capital, and the result is that the British railways have per mile by far the largest capital in the world, and they have found the money for paying increased wages, taxes, prices, etc., by vastly increasing their charges to the public, while the American railways have continually lowered theirs. The result is that Great Britain has the most expensive, and perhaps the least efficient, transport system in the world, while America has the cheapest and the most efficient. Those who urged that British railway transport should be cheapened by greatly increasing railway train-loads, by employing more powerful engines, etc., were told that this was impossible because of the narrowness of the British tunnels and of the weakness of existing bridges, difficulties which, of course, can be overcome, and which were overcome in the United States. Those who urged that scientific and uniform accounting should be introduced by the British railways, so that the causes of their

inefficiency could be made clear and the necessary remedies be adopted, were met with a refusal. The British railway system works with an antiquated and most inefficient organisation. Its reform is urgently needed. Its improvement and the lowering of its charges should have the happiest effect upon all the national industries. The revival of the British industries will depend largely on the railways. They may stifle British production unless they modernise their methods and revise their policy and their tariffs.

It is obvious that the American railways have rendered invaluable services in opening up the country and peopling it, that they are largely responsible for the wonderful development of the natural resources of the United States, and for the marvellous expansion of the American industries and their abounding prosperity. Now let us summarily compare the railway position of the British Empire and of the United States for the year 1913:

	<i>Square Miles of Territory.</i>	<i>Population.</i>	<i>Mileage of Railways.</i>
British Empire	12,808,994	439,734,060	134,131
United States	3,026,789	97,028,497	251,984

In 1913 the area and the population of the British Empire were considerably more than four times as great as the area and population of the United States. Yet this vastly greater territory and this vastly greater population possessed only a little more than half as many miles of railway as the Great Republic, notwithstanding the great industrial and financial start possessed by England. That is a very humiliating fact. It shows how greatly the development of the Empire has been

neglected. If we bear in mind the vast importance of opening up new countries by means of railways, it must be clear that the rapid increase of the white population and of the wealth of the United States is largely due to the extent and the excellence of their railways, while the comparatively slow advance of the British Empire in white population and wealth is largely, and perhaps principally, due to the insufficiency of its railway outfit. If we wish to develop the Empire we must before all develop its means of communication. The doubling and quadrupling of the Imperial railway mileage will undoubtedly double and quadruple the number and the wealth of the Empire's white population. Railways are perhaps the Empire's greatest and most urgent need.

It is scarcely necessary to add that the doubling and quadrupling of the Imperial railway mileage will act as a most powerful stimulant to commerce and to many manufacturing industries, and especially to the iron and steel industries, of the United Kingdom and of the Dominions and Possessions. The American iron and steel industry, by far the greatest in the world, owes its rise very largely to the expansion of the railways. The prosperity and population of the British Empire may obviously be vastly increased by a wise, daring and farsighted railway policy.

Convinced of the vast importance of facilitating and cheapening inland transport to the utmost, the United States Government and the Governments of the individual States have spent vast amounts of public money, not only on improving the national waterways, but also on the roads of the country. The public roads of the United States, which used to be a disgrace, are rapidly being improved. In 1914 no less than \$249,055,067, or £50,000,000, of State and local funds were spent on their improvement and construction.

THE DEVELOPMENT OF AGRICULTURE.

Agriculture is the most essential of all industries. The United States have vastly improved the national agriculture in all its branches. The prosperity and progress of the American rural industries are due partly to the bounty of Nature, partly to the action of the American Government and people. According to most American observers, the prosperity of the rural industries is largely ascribable to the fact that the bulk of the farmland as held under the ownership system; that the whole value of the improvements made falls to the farmers themselves; that they work, not for the landlord, but only for themselves; that every farm-labourer can hope to become the prosperous owner of a freehold farm. In 1910 the farmland of the United States was held as follows:

	Per Cent.
By owners .. .	598,554,617 acres = 68.1
By managers .. .	53,730,865 , , = 6.1
By tenants .. .	226,512,843 , , = 25.8
Total .. .	<hr/> 878,798,325 , , = 100

In 1910 the American farms were worked by 6,259,844 owners, 376,404 managers, and only 618,656 tenants. In the United States there were therefore ten owners to every single tenant farmer. In the United Kingdom the reverse position unfortunately obtains. Farmers who work for themselves naturally work with more energy and intelligence than farmers who work largely for a landowner, and who know that their improvements may any moment be confiscated. That was pointed out by Arthur Young more than a century ago.

The American farmers can fairly easily obtain labourers, partly because farm wages are very high, partly because drudgery on the farms has been abolished by the general use of labour-saving machinery, partly

because the farm-workers can easily acquire freehold land and houses for themselves, and start farming on their own account.

The steady improvement in cultivation effected may be gauged from the following figures, which are taken from *The Wealth and Income of the People of the United States*, published in 1915 by Mr. W. I. King, and which are based upon the official statistics:

AVERAGE CROP PER ACRE.

<i>Period.</i>	<i>Corn (Maize).</i>	<i>Wheat.</i>	<i>Oats.</i>	<i>Barley.</i>	<i>Cotton.</i>
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bales.</i>
1866-1875 ..	26.1	11.9	28.1	22.9	—
1876-1885 ..	25.5	12.3	27.6	22.4	0.348
1886-1895 ..	23.5	12.6	25.6	22.6	0.383
1896-1905 ..	25.2	13.5	29.6	25.1	0.405
1906-1912 ..	27.0	14.5	29.1	25.0	0.394

The rural industries of the United States have prospered greatly, not only because they have been blessed with a good soil and climate, because the farmers enjoy the advantages of the freehold system, and because they employ the best labour-saving machinery, but also because they have been mightily helped by the excellent American railways and the cheapness of the freight which they charge, and because the American Government has vastly aided the American agriculturists by its wise and energetic activity. The Final Report of the United States Industrial Commission of 1902 stated:

Agriculture is the fundamental, if not the most important, industry of any people, and should receive as much direct benefit from legislation as any other industry. Agriculturists are indirectly, but nevertheless vitally, interested in equitable tax laws and in legislation intended to prevent monopoly, either in manufacturing or in

transportation. As consumers of manufactures and producers of farm products, they are doubly affected by unequal or exorbitant freight charges. Their interests will be best conserved, therefore, by low uniform rates for the transportation of freight and by legislation which will promote fair competition in manufactures. The recommendations of the Commissions on these subjects and on taxation will be found in appropriate places elsewhere in this Report.

Agriculture has derived more benefit from the establishment of the Department of Agriculture and from its administrative work than from any other Federal legislation. The annual injury to fruit and grain from the ravages of insects would probably be double what it is now but for the work of the Department. The distribution of weather forecasts has been of incalculable value in aiding farmers to give timely care to crops. Its experiments in proving the adaptation of crops to climates and soils have developed agriculture into a science, and thus alike benefited the industry and the country in general.

The United States have a number of excellent institutions which serve as intelligence departments to all the economic interests of the country. Being staffed with the leading experts, being lavishly endowed with funds, and being administered and directed, not by dry-as-dust bureaucrats, but by enterprising practical men of business, they have rendered absolutely invaluable services in promoting the prosperity of the people. Some of these institutions received the following sums from the United States Government in 1914:

	<i>Dols.</i>
Department of Agriculture	22,208,141
Department of Commerce	10,958,882
Department of Labour	3,768,904
Inter-State Commerce Commission (Rail-way Control)	2,010,696
Patent Office	1,460,883
Geological Survey	1,368,545
Census Bureau (in last census year 6,419,257 dols.)	1,220,366

Science and research are certainly not starved in the United States as they are in the United Kingdom. Not only the United States Government, but the Governments of the individual States also, maintain richly endowed departments of agriculture, of commerce, of labour, of railway control, etc., which publish numerous invaluable reports. In addition to all these official agencies, there are numerous powerful local and private institutions for the promotion of scientific research, agriculture, commerce, etc.

The American Government has promoted agriculture also by draining swamps and by irrigating rainless, or almost rainless, lands. By vast irrigation works it has, during recent years, reclaimed 2,921,165 acres of waterless land, an area ten times as large as the county of Bedfordshire, at the cost of \$106,368,000. Thus it has converted arid desert lands in the south and west of the country into a veritable paradise.

The continuous and rapid progress of America's agriculture may be gauged from the following representative and most remarkable figures:

PRODUCTION OF—

	<i>Wheat.</i>	<i>Maize.</i>	<i>Cotton.</i>	<i>Wool.</i>	<i>Beet Sugar.</i>
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bales.</i>	<i>Lbs.</i>	<i>Lbs.</i>
1850	100,485,943	592,071,104	2,136,083	52,516,959	None
1860	173,104,924	838,792,740	3,841,416	60,264,913	None
1870	235,884,700	1,094,255,000	4,024,527	162,000,000	896,000
1880	498,549,868	1,717,434,543	6,356,998	232,500,000	2,688,006
1890	399,262,000	1,489,970,000	8,562,089	276,000,000	4,934,720
1900	522,229,505	2,105,102,516	10,123,027	288,636,621	163,458,075
1910	635,121,000	2,886,260,000	11,608,616	321,362,750	1,024,938,000
1914	891,017,000	2,672,804,000	16,102,143	290,192,000	1,466,802,000

The produce of many other crops has increased at a similarly rapid rate.

Exactly as the gigantic expansion of the American railways would have been impossible without the wonderful development of the American iron and steel industries, the mighty progress of agriculture, indicated by these figures, would have been impossible without the extraordinary development of the American manufacturing industries in general, and therefore of the towns, and of the American agricultural implement industry. Reapers, self-binders and other labour-saving machines, many of which were invented by Americans, have revolutionised agriculture throughout the world, and have made possible the agricultural conquest of the American West. The production of agricultural implements in the United States has increased as follows:

AGRICULTURAL IMPLEMENT PRODUCTION.

	Dols.
In 1850 ..	6,843,000
In 1860 ..	17,598,000
In 1870 ..	52,067,000
In 1880 ..	68,640,000
In 1890 ..	81,272,000
In 1900 ..	101,207,000
In 1905 ..	112,007,000
In 1910 ..	146,329,000
In 1915 ..	164,087,000

The Americans possess by far the largest agricultural implement industry in the world. Its output has increased twenty-five-fold since 1850, and four-fifths of the machines produced are retained in the United States. In 1850 the value of the agricultural machines and implements possessed by the American farmers came to \$151,587,638. In 1910 their value amounted to \$1,265,149,783, having increased eightfold. Without that mighty increase in labour-saving machinery the vast augmentation of the American crops would, of course, have been impossible.

The prosperity of America's agriculture is due ~~not~~ so much to the vastness of the natural resources as to the energy and ability of the American people, and particularly to the employment of labour-saving machinery. The *Encyclopaedia Britannica* states under the heading "Agriculture":

Since 1870 the most important factors in the development of America's agriculture have been the employment of more scientific methods of production and the more extensive use of machinery. . . . A really scientific plough was practically unknown before 1870. Thirty years later the large farms of the Pacific States were ploughed, harrowed and sowed with wheat in a single operation by 50 horse-power traction engines drawing ploughs, harrows and press drills. Since 1850 there has been a transition from the sickle and the scythe to a machine that in one operation mows, threshes, cleans and sacks the wheat, and in five minutes after touching the standing grain has it ready for the market. Hay-stackers, potato planters and diggers, feed choppers and grinders, manure-spreaders, check-row corn-planters and ditch-digging machines are some of the common labour-saving devices.

By the 28th of August, 1907, the United States Patent Office had issued patents for 13,212 harvesting machines, 6,352 threshers, 6,680 harrows and diggers, 9,649 seeders and planters, and 13,171 ploughs. In the manufacture of agricultural machinery the United States leads the world. The total value of the implements and machinery used by farmers of the United States in 1880 was \$406,520,055; in 1890, \$494,247,467; in 1900, \$761,261,550—a gain in this last decade of 54 per cent. The total value of the implements and machinery manufactured in 1850 was \$6,842,611; in 1880, \$68,640,486; in 1890, \$81,271,651; in 1900, \$101,207,428. These figures, however, are a very poor indication of the actual use of machinery, on account of the rapid decrease in prices following its manufacture on a more extensive scale and by improved methods.

The effects of the new agriculture are apparent from the

following figures: By the methods of 1830 it required 64 hours and 15 minutes of man-labour and cost \$3.71 to produce an acre of wheat; by the methods employed in 1896 it required 2 hours and 58 minutes of man-labour and cost 72 cents. To produce an acre of barley in 1830 required 63 hours of man-labour and cost \$3.59; in 1896 it required 2 hours and 43 minutes and cost 60 cents. An acre of oats produced by the methods of 1830 required 66 hours and 15 minutes of man-labour and cost \$3.73; the methods of 1893 required only 7 hours and 6 minutes and cost \$1.07. With the same unit of labour the average quantity of all leading crops produced by modern methods is about five times as great as that produced by the methods employed in 1850, and the cost of production is reduced by one-half.

The Americans have revolutionised agriculture. With the powerful machinery invented, manufactured and employed by them, the productive power of the agricultural worker has in some directions been increased twentyfold and more.

The expansion of America's agricultural production has been prodigious and it has been universal. It has been due to the rapid increase of the population through births and immigration, to the possession of numerous well-managed railways, to cheap freights, to the increasing use of labour-saving machinery, to the flourishing condition of the American manufacturing industries, which provided agriculture with ready and opulent markets, to the powerful agricultural machinery industry and last, but not least, to the fostering care of the American Government which protected and advanced the agricultural interests in every possible way.

Britain might, and should, learn from America's example. Unfortunately, agriculture has been sadly neglected, not only in the United Kingdom, but in the outlying parts of the Empire as well. Throughout the Empire production, and especially agricultural production,

has been largely disregarded, while commerce and speculation have been encouraged. Throughout the Empire production, and especially agricultural production, has been sacrificed to the pursuit of paper profits and of paper wealth, and the interest of the country to that of the towns. Although the British Empire has an area which is more than four times as large as that of the United States, far fewer white people are working on the land in the Empire than in the United States. Even Germany maintains within her narrow borders a larger number of white agriculturists than the whole of the British Empire, although the latter is eighty times as extensive as the former. Agriculture is insufficiently developed not only in Great Britain, but also in the Dominions. Of the population of all Australia, fully one-third live in the over-crowded capitals, while half of the population of Victoria live in Melbourne, and half of the population of New South Wales in Sydney. That is an unhealthy and a deplorable state of affairs.

How grossly the agricultural resources of the United Kingdom have been neglected is clearly proved by the following most extraordinary comparison:

	<i>United Kingdom.</i>	<i>Germany.</i>
	<i>Acres.</i>	<i>Acres.</i>
Total area	77,721,256	133,585,000
Cultivated area	46,931,637	78,632,139
Woods and forests	3,069,070	34,272,841

PRODUCTION IN 1912.

	<i>United Kingdom.</i>	<i>Germany.</i>
	<i>Tons.</i>	<i>Tons.</i>
Wheat and rye	1,568,700	15,958,900
Barley	1,320,400	3,482,000
Oats	2,915,900	8,520,200
Potatoes	5,726,342	50,209,500
Hay	14,024,222	36,524,915

	<i>United Kingdom.</i>	<i>Germany.</i>
	<i>Tons.</i>	<i>Tons.</i>
Cattle	11,914,635
Cows	4,400,816
Horses	Not ascertainable
Pigs	3,992,549
Sheep	28,967,495
		20,182,021
		10,914,283
		4,523,059
		21,923,707
		5,803,445

The gigantic difference in production in Germany's favour shows how vastly British agricultural production may be increased to the great advantage of the agricultural population of the nation as a whole.

The feudal age is past. Feudal tenure of land is not compatible with democracy and with modern production. British agriculture should, without delay, be placed from a feudal on a freehold basis in the United Kingdom and throughout the Empire, and its development should be promoted by the general fostering of production, by the organisation of industry, by a wise policy of migration and rural settlement, by the provision of cheap transport, especially railways, and of storage facilities, etc., by the creation of cheap rural credit, by the provision of the best scientific organisations and, if necessary, by the imposition of protective tariffs.

A GLANCE INTO THE FUTURE.

The development of the latent resources of the world by labour-saving machinery has only begun. The present outfit of industries will probably be completely out of date within a decade or two. Before long electricity may become the preponderant motive force, although coal will remain indispensable in many industries, especially in iron-smelting. The electric current has many advantages over coal, and once more the United States may revolutionise the industrial methods of the world.

The power of labour-saving machinery employed in the

United States is stupendous. The horse-powers used were, according to the *Analyst* of June 8, 1914, as follows:

	<i>Horse-Powers.</i>
Employed in manufacturing ..	19,400,000
Electric light and power stations ..	7,700,000
Street and electric railways ..	3,400,000
Steam railways	50,000,000
Mines and quarries ..	5,000,000
Various	5,400,000
 Total	<u>90,900,000</u>
Motor vehicles	<u>22,500,000</u>
 Grand Total	<u>113,400,000</u>

Of all the horse-powers used in the United States, about 75,000,000 depend upon energy generated from coal. According to the present state of geological knowledge, the United States possess the bulk of the world's coal, as I have shown in the previous chapter. The Americans are a far-sighted, active people. Although they possess the most gigantic stores of coal in the world, they do not wish to exhaust them prematurely. They mean to economise their irreplaceable coal as far as possible, while Great Britain is exporting as much as she can. Happily, the United States possess an alternative and inexhaustible source of power in their numerous waterfalls. In a report written by Mr. M. O. Leighton, the Chief Hydrographer of the United States Geological Survey, and published in the Report of the National Conservation Commission, we read:

It is found that the total power available in the surveyed portions, including storage, is about 53,000,000 horse-power. If this be considered as one-fourth, to correspond with the portion of the country surveyed, the total power of the country, with practical maximum storage, will be about 212,000,000 horse-power.

The second method of computation involves considera-

tion of the increase of power available from storage in the several portions of the country in which surveys have been made, and applying the ratio of increase to un-surveyed and similar country in those regions. The topographical surveys, while they cover only one-fourth of the total area of the country, have nevertheless been prosecuted in all sections so that the storage data are applicable to all physiographic types that are comprised within the United States. Applying the information in this way, we obtain a grand total of 230,800,000 horse-power, which, it appears to the writer, is a more accurate figure than that obtained by the first method.

In any case, therefore, it may be assumed with confidence that, were all practicable storage sites utilised and the water properly applied, there might be established eventually in the country a total power installation of at least 200,000,000 horse-power, and probably much more.

The United States have in reserve a superabundance of water-power, and the demand that inexhaustible water-power should be made to replace exhaustible coal is rapidly growing, especially as electricity generated from waterfalls has many advantages over coal. The Monthly Bulletin of the New York Chamber of Commerce for February, 1918, contained a paper entitled "The ABC of Water-Power," which stated:

Two cubic feet of water, which weigh one hundred and twenty-five pounds, by falling a distance of only six feet will produce one horse-power of energy. Falling water in early days was used to turn water-wheels which provided the necessary horse-power to operate near-by factories, chiefly flour mills. Now the falling water is guided by concrete penstocks to powerful water turbines, which whirl great electric generators, and the horse-power thus developed in form of electric current is transmitted for hundreds of miles over small copper wires to cities and towns, where it is used to operate great manufacturing plants, run street railways, and furnish light and heat. The plants which produce electricity in this way are known as Hydro-Electric plants. . . .

Hydro-Electric plants cost more and take longer to instal than steam plants, but Hydro-Electric plants have these advantages: the cost per horse-power of energy produced is less, and increased output does not call for a corresponding increase of fuel or labour. The amount that is necessary to set aside annually to cover charges for depreciation for Hydro-Electric plants is estimated to be not more than one-third to one-half of that necessary with a steam plant of like capacity. . . .

It is well said that water-power is unlike most other natural resources in that it is not diminished by use, nor is it conserved by non-use. Coal which is not used to-day remains to be used hereafter, but the energy of water which is allowed to flow by unused neither decreases nor increases the future supply, but is irretrievably lost. Our supply of coal—the principal source of energy—while vast, is not unlimited. It is estimated that seven to fourteen and even seventeen and one-half tons of coal is consumed in producing one horse-power. The utilisation of water-power results in the saving of this coal for future use. In other words, the real waste of water-power is its non-use. . . .

In an article in the *Electrical World* for June 23, 1917, entitled "Why Hydro-Electric Development Lags," Hugh L. Cooper treated statistically the release in man-power, coal tonnage, railway facilities and capital that would result from the utilisation of the water horse-power wasted in the United States. He estimates that 740,000 men would be released for other industries or for agriculture if 35,000,000 horse-power for one year were developed hydro-electrically instead of by the equivalent process of coal combustion. Every 50 horse-power developed hydro-electrically releases one man. The change would further effect a saving of 280,000,000 tons of coal and 600,000 freight cars necessary to haul the coal—or four times the number needed to supply the freight-car shortage of March, 1917.

Already many important American industries, such as the agricultural implement industry, the automobile industry, the boot and shoe industry, the clothing indus-

try, the foundry and machine-shop industry, and many others, are based mainly on electric power. Steam-power is rapidly being replaced by electric power. Before long steam railways may be as rare in the United States as horse tramways.

It should be observed that the water-power of the British Empire far exceeds that of the United States. The water-power of Canada alone is supposed to approximate, or even to exceed, that of the United States.

The facts and figures given in these pages show that the United States owe their wonderful progress in population, wealth and power not to their natural resources—which, though magnificent, are probably inferior to those owned by the British Empire—but to the wise and energetic development of their resources by the American Government and people. The American Government and people have not followed a cosmopolitan policy, but a national one. They have not followed a policy of *laissez faire*, of aimless drift, favourable to the financier, the speculator, the middle-man, the exploiter, nor a policy of restriction with regard to both population and production. They have followed a policy of energetic action favourable to production, which, after all, is dictated by common sense. Hence they have attracted immigrants by all means in their power, and have developed their magnificent natural resources to the full. They have pursued neither a short-sighted policy recommended by economic doctrinaires and commercial profit-snatchers, by unproductive speculators and middlemen, nor an equally short-sighted policy favourable to some clamorous section of the inhabitants, but ruinous to the nation as a whole. They have wisely pursued a great and truly national policy, and have developed national production as a whole and in all its branches. Thus the United States have

become the largest producers among the nations of the world of many valuable minerals, such as coal, iron ore, copper, silver, zinc, lead, sulphur, petroleum, and the largest producers of various forest productions, especially of timber. They have become foremost among the nations of the world in many agricultural productions, such as wheat, maize, oats, tobacco, cotton, cattle, pigs. They have likewise become the greatest producers in the world of many manufactured articles, such as pig-iron, steel, woollen goods, silk goods, rubber goods, leather, boots, paper, clothing, cutlery, clocks and watches, glass, soap, furniture, motor-cars, electrical machinery, of labour-saving machines of every kind, and possibly of cotton goods, and before long they may be the largest shipbuilders in the world as well. England's industrial paramountcy is gone. The United States have taken their place. However, the British race may recover its former great position by energetically developing the unrivalled resources of the Empire.

The intention of the Americans to replace steam-power based on coal by electrical energy based on water-power shows the vastness of America's industrial plans and the greatness of America's industrial future. The United States know no standing still. They are not satisfied with the methods employed by their grandfathers. They have no fossilised industries, such as may be found in Great Britain. They recognise that the essence of industry is progress, is change. America's future progress in production and in wealth will probably put into the shade her past advance. Man has only begun to enlist all the sciences in the service of industry. The British Empire is more than four times as large as the United States, and its resources are more varied and are probably far greater than those possessed by the Republic of the West. If the great Imperial resources should be

developed with American energy, by American methods, and in accordance with the precedents set by the American Government and people, the wealth of the United Kingdom and of the British Empire will increase at an incredibly fast rate, and future generations may be as surprised at the low cost of the present War as men living now are surprised at the low cost of the British wars of the eighteenth century and of the twenty years' struggle with Napoleonic France. Britain's present wealth may seem to future generations pitiable poverty. The prospects of the British Empire are boundless if the War be brought to a victorious end, and if the unfathomable latent wealth of the Empire be developed with American energy and wisdom.

CHAPTER V

THE INEFFICIENCY OF BRITISH INDUSTRIAL PRODUCTION—THE POSSIBILITY OF TREBLING OUTPUT*

THE United Kingdom and the British Empire can best pay off the gigantic debt which is accumulating owing to the War, and which may grow to an almost unimaginable figure, by increasing production to the utmost and by developing with the greatest energy the boundless resources with which Providence has endowed them. Thus Britain's wealth and national income may be enlarged so rapidly and so vastly that the cost of the War may seem as insignificant to future generations as the cost of the eighteenth-century war, and even that of the twenty years' struggle with Napoleonic France, appears to men of the present age.

In the previous chapter I have shown that Great Britain and the Empire may profit from America's example by developing rapidly the inland transport system and agriculture in the United Kingdom and the whole Empire, and that population and general wealth and well-being of Motherland and daughter-States may be immeasurably increased by the policy of extending and improving the railways and canals, providing cheap transport and promoting the rural industries with all the means which science, organisation and finance have placed at man's disposal, a policy which has been sadly neglected in the past. In the following pages I shall endeavour to show that the manufacturing industries, which are the principal resource of the inhabitants of the

* From *The Nineteenth Century and After*, November, 1918.

United Kingdom, have been as much neglected as the British transport system and British agriculture, that the British industries also stand in need of far-reaching reforms, and I shall show the direction in which the British peoples may learn from the American manufacturing industries and from American manufacturing methods as well.

It is very widely believed that the American people owe their enormous wealth mainly to the great extent of their territory and to the wonderful, vast and varied resources of the soil; that the bulk of their income is derived from their powerful rural industries, their wealthy mines and their extensive forests. The United States have undoubtedly been singularly blessed by Nature. Among the nations of the world the American people are the largest producers of wheat, maize, oats, tobacco, cotton, cattle, pigs, timber, coal, iron ore, copper, silver, zinc, lead, sulphur, petroleum, etc. Although the United States possess a world-dominating position in some of the most valuable foodstuffs and in some of the most precious raw materials, the principal source of the country's wealth lies, not in its fields, forests and mines, but in its factories. The colossal income of the people, which is at least three times as great as that of the inhabitants of the United Kingdom, is chiefly won, not in the vast expanses of their plains and mountains, but within the narrow limits of their towns. This may be seen from the following official figures:

VALUE OF PRODUCTION IN 1909-1910.

	Dols.
Manufacturing industries	20,672,051,870
Agriculture	8,498,311,413
Mining	1,992,431,412
Forestry	684,479,859
Fisheries (1908)	65,567,555
 Total	 31,912,841,209

It will be noticed that in 1910 the productions of the American manufacturing industries represented a value which was almost twice as great as that of the productions of agriculture, mining, forestry and fishing combined.

Many Englishmen still believe that Great Britain is the greatest industrial country in the world. That belief, which has been fostered by party politicians and pseudo-economists of the *laissez faire* school, is totally unfounded. Until lately the productivity of the British industries was unknown. Statesmen, economists and others interested in economic facts had to rely upon guesswork. Many endeavoured to prove the supremacy of Britain's industries by means of the delusive export figures. In 1907 a Census of Production for the United Kingdom was taken for the first time. Hence a fairly exact comparison can at last be instituted between British and American industrial production. The age of industrial fiction is gradually being replaced by that of industrial fact.

While the first British Census of Production relates to the year 1907, the eighth American Census of Production—the first was taken as early as 1850—relates to the year 1909. The interval of two years between the two Censuses is so small that the result obtained may in fairness be compared. Perhaps it would be best that in the future British Censuses would be made to coincide in date with the American Censuses. According to the two official documents, American and British industrial production was in 1907 and 1909 as follows:

	<i>No. of Workers.</i>	<i>Value of Products. £</i>
United States, private manufacturing industries only, in 1909 ..	6,615,046	4,134,412,000
United Kingdom, industries of all kinds, including the production of public utilities, such as gas and waterworks, etc., in 1907 ..	6,019,746	1,617,340,000

It will be observed that the number of workers in the American industries was only 10 per cent. greater than that of the British industries, while the value of their productions was more than two and a half times as great. In other words, one American industrial worker had, on the broadest average, as great an output, measured at wholesale prices, as had from two to three British workers. Some wholesale prices of manufactured goods are slightly higher in the United States than in England and some are slightly lower. On an average the wholesale, but not the retail, price level is almost identical in the two countries. Hence exported American goods can, and do, compete freely with British goods, not only in neutral markets, but in the British home market as well. The higher price of American goods, when bought retail in the United States, is due to the greater cost of retailing in that country, owing to higher wages for shop-assistants, etc. It follows that one American worker produced approximately as much as from two to three British workers. Probably the average American worker produced at least three times as much, as will presently be shown. This superiority in individual production is a most interesting and most important factor which will be discussed farther on.

Comparisons of the totals given would seem to show that the industrial production of the United States is two and a half times as great as that of the United Kingdom. In reality it is considerably greater. The British Census total sums up the money value of all industrial activities. It includes not only all factory production, but dwarf industries, non-factory production, carried on in shops and private houses, as well. In addition it includes the value of houses built and of house repairs, of laundry work done, of railways, telegraphs and telephones constructed or repaired, of the work done by the

productive national and municipal services such as warship-building by the Government, municipal gas and water works, etc., all of which are left out of the American total. Lastly, it includes the production of mines and quarries. In giving the British total for comparison with the American total, I have deducted the value produced by the mines and quarries, which is omitted from the American figure, but I have preserved the large item of public utilities, such as gasworks, waterworks, etc., because some of these services are in private hands in the United States, and appear, therefore, under the heading of Private Industries in the American Census. The American total sums up only the production of factories in the accepted sense of the word. It expressly excludes not only the produce of the public services, but also the laundry industry, the important item of house-building and repairing, and all those non-factory industries which are officially described in the United States as "Hand and Neighbourhood Industries." The latter alone produced in 1900, when they were specially accounted for, £318,645,000 worth of goods. If we add to the American total this important sum and deduct from the British total the large values produced by the housebuilders and repairers and by the productive undertakings of the State and of the municipalities, and the various other items which do not appear in the American total, it will be clear that in 1907-1909 the manufacturing industries of the United States produced at least three times as much as the manufacturing industries of the United Kingdom, and that all the industrial activities of the United States produced likewise at least three times as much as all the industrial activities of the British Isles. The fact that American industrial production was in 1907-1909 at least three times as great as British industrial production cannot be gainsaid. Britain has

lost her former industrial supremacy to the United States.

In the British and in the American Censuses of Production the numerous industries for which statistics are given are divided into a few large groups. Let us now compare the British and American industries by groups. As the grouping has not been absolutely identical in the two countries, some rearrangement was necessary to make the results fairly comparable. The rearrangement effected yields the following comparative and comparable data:

BRITISH AND AMERICAN INDUSTRIAL PRODUCTION IN
1907-1909.

	<i>United States in 1909.</i>	<i>United King- dom in 1907.</i>
Manufacture of food, drink, and tobacco	£ 1,020,219,000	£ 197,734,000
Iron and steel and their products, inclusive of land vehicles, railway vehicles, railway repair shops, shipbuilding, agricultural and electrical machinery, etc.	924,704,000	375,196,000
Textiles and clothing	612,398,000	441,554,000
Timber and Woodworking Trades	337,655,000	46,390,000
Leather and Leather goods ..	198,543,000	34,928,000
Paper and printing	235,857,000	61,308,000
Chemicals	305,320,000	75,032,000
Stone, clay and glass (exclusive of building and repairing) ..	106,347,000	29,608,000
Productions of metal, exclusive of iron and steel	248,082,000	93,465,000
Various	180,138,000	34,564,000

While the production of the textile and clothing trades was 40 per cent. greater in the United States than in the United Kingdom, that of the American iron and steel industries was nearly two and a half times as great as that of the British. The production of the other metal industries was more than two and a half times as great in

America as in the United Kingdom; that of the stone, clay and glass-working industries was more than three and a half times as great; and that of paper and printing nearly four times as great. The output of chemicals in America exceeded that of the United Kingdom more than four times, and that of manufactured food, drink and tobacco more than five times. That of leather and leather goods was more than five and a half times, that of the wood-working industries was seven times, and that of the not classified industries more than eight times as great in the United States as in Great Britain. In giving the total of the stone, clay and glass-working industries, I have deducted from the British figures the value of building and repairing, as corresponding figures are not included in the American total. I have not been able to obtain the American building and repairing totals, but only the cost of the American buildings raised in the fifty-one principal cities. Their value compared as follows with that of the buildings erected in the whole of the United Kingdom:

Value of buildings raised in fifty-one principal	£
United States cities only in 1909 .. .	154,187,000
Value of buildings raised in the whole of the United	
Kingdom in 1907	39,378,000

The value of American buildings constructed in the fifty-one great towns alone was nearly four times as large as that of the British buildings erected in the whole of the United Kingdom. If figures were available for the whole of the United States, the value of the American building operations would probably be at least five times as great as that of the British building operations. It is worth noting that New York and Brooklyn alone constructed in 1909 buildings to the value of £50,063,000, a figure which exceeds that for the whole of the United Kingdom by more than 25 per cent.

The superiority in production possessed by the great American industries over the British industries is obviously overwhelming. This impression is strengthened by comparing a few representative individual industries of the two countries :

	<i>United States in 1909.</i>	<i>United Kingdom in 1907.</i>	<i>Superiority.</i>
Shipbuilding and repairing exclusive of warships ..	£ 14,672,000	£ 41,039,000	British 3-fold
Cotton goods ..	125,678,000	132,000,000	,, 5%
Dyeing and finishing textiles ..	16,711,000	18,000,000	,, 8%
Brewing and malting ..	82,616,000	67,254,000	American 25%
Soap and candles ..	22,898,000	12,707,000	,, 2-fold
Cocoa, chocolate and confectionery ..	31,437,000	16,171,000	,, 2 „
Matches ..	2,271,000	862,000	,, 2½ „
Paint, colours and varnish ..	24,978,000	9,127,000	,, 2½ „
Railway carriages and waggons ..	24,746,000	9,850,000	,, 2½ „
Pens and pencils ..	2,539,000	791,000	„ 3 „
Hats and caps ..	16,598,000	5,256,000	„ 3 „
Clothing ..	190,566,000	62,169,000	„ 3 „
Glass and glassware ..	18,419,000	4,899,000	„ 3½ „
Cement ..	12,641,000	3,621,000	„ 3½ „
Leather tanning and dressing ..	65,575,000	18,289,000	„ 3½ „
Paper ..	53,531,000	13,621,000	„ 4 „
Gloves ..	4,726,000	1,056,000	„ 4½ „
Hosiery ..	40,029,000	8,792,000	„ 4½ „
Boots and shoes ..	102,357,000	20,095,000	„ 5 „
Cutlery and tools ..	1,653,000	2,047,000	„ 5 „
Cardboard boxes ..	10,970,000	2,067,000	„ 5½ „
Wooden furniture ..	43,207,000	7,684,000	„ 5½ „
Butter and cheese ..	54,911,000	10,164,000	„ 5½ „
Fertilisers ..	20,794,000	3,552,000	„ 6 „
Silk goods ..	39,382,000	5,345,000	„ 7½ „
Pianos, organs, etc..	17,957,000	1,865,000	„ 9½ „
Firearms and Ammunition ..	6,822,000	677,000	10 „
Clocks and watches..	7,039,000	613,000	„ 11½ „
Motor-cars ..	49,840,000	3,585,000	„ 14 „

The advocates of the policy of *laissez faire* frequently assert that Great Britain is the foremost industrial nation in the world. They habitually "prove" that reckless assertion by pointing to the figures of England's foreign trade and to England's supremacy in shipbuilding and the cotton industry. In the table given all the individual industries are included for which comparative data of output are available. They show that in 1907-1909 the output of the British shipbuilding industry was three times as great as that of the American shipbuilders. Unfortunately, it seems likely that England's paramountcy in shipbuilding may be transferred to the United States in consequence of the War. Besides, the shipbuilding industry is not as important as is generally believed. Measured by value, it represents only one-fortieth of England's industrial production. The yearly output of the cotton industry is more than three times as valuable as that of shipbuilding. In the cotton industry English production had in 1907-1909 an advantage of nearly 5 per cent. over the United States, while the British dyeing and finishing of textiles had an advantage of nearly 8 per cent. In these two industries England's superiority was infinitesimal, and had probably disappeared before the War. In brewing and malting the Americans were only 5 per cent. ahead of the British, but in all the other industries enumerated America's superiority over the United Kingdom was very great, ranging from twofold in the case of soap and candles, cocoa, chocolate and confectionery, in the making of which little skill is required, to a fivefold American superiority in boots and shoes, cutlery, furniture, etc., to a more than sevenfold superiority in silk manufactures to a more than ninefold superiority in pianos and organs, and to a fourteenfold superiority in motor-cars. It is significant that, shipbuilding excepted, England's in-

dustrial position is strongest in those industries which are carried on by the cheapest, and largely by female and juvenile, labour, and that America's superiority is greatest in those industries which require the highest degree of scientific organisation, the most perfect and the most powerful machinery, and the greatest technical skill.

Now let us study the progress of some American industries since 1850, the year when the first Industrial Census was taken:

<i>Year.</i>	<i>United States Population.</i>	<i>Number of Wage-Earners.</i>	<i>Value of all Industrial Products.</i>
1850 .. .	23,191,876	957,059	Dols. 1,019,106,616
1914-1915 .. .	98,646,491	7,036,337	24,246,434,724

Between 1850 and 1914-1915 the population of the United States increased fourfold, the number of industrial wage-earners sevenfold, and the value of their industrial productions no less than twenty-four-fold. During the period under consideration the value of output increased three and a half times as fast as the number of the workers. In other words, the average production per worker, measured by value, was in 1915 three and a half times as great as it was in 1850. However, as the prices of most manufactured goods have been greatly reduced since 1850, the quantity of goods produced per worker has increased considerably more than three and a half-fold, notwithstanding the great shortening of working hours. Mechanical progress has evidently more than quadrupled the productive power of the average American factory worker since the middle of the last century.

It is very interesting to follow the development of some of the American industries in detail.

PRODUCTION OF—

<i>Year.</i>	<i>Pig-Iron.</i>	<i>Cotton Goods.</i>	<i>Woollen Goods.</i>	<i>Silk Goods.</i>
	<i>Tons.</i>	<i>Dols.</i>	<i>Dols.</i>	<i>Dols.</i>
1850 ..	563,755	61,869,184	48,608,779	1,809,476
1860 ..	821,223	115,681,774	73,454,000	6,607,771
1870 ..	1,665,179	177,489,739	199,257,262	12,210,662
1880 ..	3,835,191	192,090,110	238,085,686	41,033,045
1890 ..	9,202,703	267,981,724	270,527,511	87,298,454
1900 ..	13,789,242	339,200,320	296,990,494	107,256,258
1910 ..	27,303,567	628,391,813	507,166,710	196,911,677
1915 ..	30,966,152*	701,301,000	464,249,813	254,011,000

Since 1850 the production of woollen goods has increased tenfold, that of cotton goods eleven and a half-fold, that of pig-iron fifty-five-fold and that of silk goods one hundred and fifty-fold. In 1850 American production in all these was quite insignificant compared with British production. Now the United States are by far the largest producers in the world of iron and steel and of the goods made from them, of woollen goods and silk goods, and very likely their cotton industry has by now overtaken that of Great Britain as well.

In 1846 England introduced Free Trade. Mr. Cobden had assured his political and industrial opponents and all those who doubted the wisdom of that policy that England's industrial supremacy was unchallenged and unchallengeable; that England "was, and always would remain, the workshop of the world." At that time England mined two-thirds of the world's coal, produced

* The figures for 1913 have been given, as the War made American iron production temporarily abnormal.

two-thirds of the world's iron, worked up two-thirds of the world's cotton, possessed two-thirds of the world's shipping, etc. Since then England has lost her industrial paramountcy, which she had acquired under the most rigid form of Protection, and the United States have taken her place as the world's principal and most prosperous manufacturer. During the Free Trade period some British industries have prospered and progressed, and others, such as agriculture, the silk industry, etc., have declined and decayed. Progress is a term of comparison. Progress is not absolute, but is relative. Compared with the tremendous industrial advance made by the manufacturing industries of the United States since 1850 under high Protection, that of the British industries on the whole made during the same time under Free Trade is quite insignificant.

Before 1850 the Americans were a nation of frugal farmers. Since then they have become the greatest and the richest industrial nation in the world. How profoundly social conditions and the life of the people have been affected by this change may be gauged from the following figures:

PRODUCTION OF—

<i>Year.</i>	<i>Men's Clothing.</i>	<i>Women's Clothing.</i>	<i>Furniture.</i>
	<i>Dols.</i>	<i>Dols.</i>	<i>Dols.</i>
1850	48,312,000	?	17,663,000
1860	80,831,000	7,181,000	25,632,000
1870	148,660,000	12,901,000	68,522,000
1880	209,548,000	32,005,000	77,846,000
1890	251,020,000	68,164,000	111,743,000
1900	276,717,000	159,340,000	125,316,000
1905	355,797,000	247,662,000	170,447,000
1910	485,677,000	384,752,000	229,197,000
1915	458,211,000	473,888,000	265,706,000

<i>Year.</i>	<i>Bread and Bakery Products.</i>	<i>Confe- ctionery.</i>	<i>Beer.</i>	<i>Cigars and Cigarettes.</i>
	<i>Dols.</i>	<i>Dols.</i>	<i>Dols.</i>	<i>Dols.</i>
1850 ..	13,294,000	3,041,000	5,729,000	?
1860 ..	16,980,000	5,361,000	21,311,000	9,069,000
1870 ..	36,908,000	15,923,000	55,707,000	33,374,000
1880 ..	65,825,000	25,637,000	101,058,000	63,980,000
1890 ..	128,422,000	55,997,000	182,732,000	129,693,000
1900 ..	175,369,000	60,644,000	236,915,000	159,959,000
1905 ..	269,583,000	87,087,000	298,346,000	214,344,000
1910 ..	396,865,000	134,796,000	374,730,000	260,088,000
1915 ..	491,893,000	170,845,000	442,149,000	314,884,000

Between 1850 and 1915 the production of men's clothes has increased more than ninefold, but between 1860 and 1915—there are no figures for 1850—the production of women's clothes increased more than sixty-five-fold. In 1860 the industrial output of women's clothes was less than one-tenth that of men's clothes. Women evidently wore chiefly garments made at home. In 1915 the American women were no longer dressed in home-made clothes, for the industrial production of women's clothes had overtaken that of men's clothes. In 1850 the industrial production of bread and bakery products was quite insignificant. The thrifty American housewives not only made their own clothes, but baked their own bread. Since then the industrial production of bread, etc., has increased nearly fortyfold.

The vast increase in the opulence of the American people and the change which the rapid increase of wealth has effected in the lives and habits of the people can be seen, furthermore, from the production of furniture, which between 1850 and 1915 has grown fifteenfold. Cigars and cigarettes have taken the place of the cheap and popular pipe. While the production of smoking tobacco has increased eight and a half-fold since 1860,

that of cigars and cigarettes has grown no less than thirty-five-fold during the same period, and the value of cigars and cigarettes consumed is now double that of smoking tobacco. Since 1850 the production of confectionery has increased fifty-seven-fold, and that of beer no less than seventy-eight-fold. Of course, in the middle of last century a good many American housewives not only baked their bread and made their own clothes, but brewed their husband's beer?

The facts and figures supplied in these pages prove that Great Britain is no longer the workshop of the world; that the American manufacturing industries, which, in 1850, were quite insignificant if compared with those of Great Britain, have advanced at so extraordinarily rapid a rate that their combined output is now three times as great as that of all the British industries; that Great Britain has lost her former manufacturing supremacy in all industries, except a few, and that the paramountcy even of these few has become exceedingly precarious. Naturally it will be asked: Why have the American manufacturing industries expanded so rapidly as to overtake, and to outpace completely, the old-established, powerful and wealthy industries of Great Britain?

The cause of America's wonderful industrial advance is not to be found in the great natural resources of the United States, for natural resources, however great, do not exploit themselves, but are exploited by men. The United States owe their industrial supremacy to the energetic activity of the American Government and people. America's manufacturing success is due mainly to two reasons: to the technical policy pursued by both employers and employed, and to the economic policy pursued by the American Government and people.

In the opening pages of this paper I have shown, by comparing the entire industrial production of the United

States and of Great Britain and the number of industrial workers employed in the two countries, that in 1907-1909 production per worker was approximately three times as great in the United States as in the United Kingdom. That fact seems so extraordinary and so incredible that it seems necessary to establish its correctness by a more detailed investigation. Unfortunately, the British and American industries have been differently classified in the Censuses of Production. Hence one has to rely for comparison on those industries for which comparable statistical data are available. In these comparable industries production per wage-earner was in 1907-1909 as follows (see p. 120):

The gross output per worker per year gives the value of the average worker's yearly production at wholesale prices. It includes, therefore, not only the value of his personal work, but also the value of the various materials used by him in manufacturing and the general expenses of the factory, such as rent, taxes, depreciation, etc. We can easily ascertain the net output of the workers by deducting from the value of their gross product the value of the materials which they have used in manufacturing and the general factory expenses, for which items data are furnished by the Censuses. The net output figures resulting from this reduction give the value of the work which the workers have actually done, as the cost of the raw materials used and the factory expenses have been eliminated. The cost of raw materials used in manufacturing and general factory expenses differ in the United States and Great Britain. Hence we can best ascertain the efficiency of production and of labour in the two countries by comparing the net output figures per worker.

A glance at the table given shows that both the gross and the net output per worker was very nearly three

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	Gross Output per Worker per Year.		Net Output per Worker per Week.	
	United States in 1909.	United Kingdom in 1907.	United States in 1909.	United Kingdom in 1907.
Boots and shoes ..	516	171	3 10 0	1 7 4
Cardboard boxes ..	275	106	2 15 0	1 0 0
Butter and cheese ..	2,979	1,310	8 3 0	2 8 1
Cement ..	472	192	4 17 8	2 10 10
Clothing ..	484	158	4 7 4	1 3 11
Cocoa, chocolate and confectionery ..	662	296	4 18 5	1 12 3
Cotton goods ..	332	236	2 13 9	1 10 6
Clocks and watches ..	296	137	4 3 0	1 7 9
Cutlery and tools ..	323	164	4 1 6	1 8 1
Dyeing and finishing textiles ..	379	184	4 4 3	1 18 11
Gas works ..	897	422	11 16 7	4 1 1
Firearms and ammunition ..	464	152	4 9 2	2 2 8
Gloves ..	416	233	3 10 9	1 11 2
Hats and caps ..	414	149	4 1 10	1 5 10
Hosiery ..	309	184	2 2 8	1 3 5
Leather tanning and dressing ..	1,054	686	4 13 1	2 5 0
Lime ..	258	141	3 2 4	1 13 5
Brewing and malting ..	6,209	937	19 10 5	6 7 3
Matches ..	1,729	408	7 3 1	1 13 0
Paint, colours, and varnish ..	4,012	1,375	12 9 3	3 16 2
Paper ..	15,846	4,201	5 3 5	2 2 8
Pens and pencils ..	710	241	4 5 9	1 9 8
Printing and publishing ..	1,154	1,133	7 16 11	3 13 1
Railway vehicles ..	2,274	1,127	4 0 5	2 7 5
Silk goods ..	989	608	3 9 3	1 1 2
Soap and candles ..	2,160	1,092	11 7 8	2 19 8
Average per head for all the industries enumerated	1,747	617	5 17 7	2 3 1

times as great in the United States as in Great Britain. The gross output per average worker per year for all the twenty-six industries enumerated was in 1907-1909 £1,747 in the United States and only £617 in Great Britain. The net output per worker per week for all these twenty-six industries was £5 17s. 7d. in the United States and only £2 3s. 1d. in Great Britain. That is a tremendous difference which shows that the United States are far ahead of Great Britain in manufacturing efficiency. It shows that the American industries have overtaken the British not so much owing to the superiority of America's natural resources as owing to the superiority of American manufacturing methods.

The table contains all the industries for which comparable data can be extracted from the British and American Censuses of Production. It has not been compiled with the intention of making out a case, and it is to be regretted that some of the most efficient American industries, such as the iron and steel industries, the machinery trades, etc., had to be omitted. Their inclusion would undoubtedly have considerably increased the superiority of the output of the average American worker over the output of the average British worker.

Wages depend obviously upon net output. In fact, they are paid out of net output. As the manufacturer has to find the money for the materials used and for the general expenses of his factory, the net output of his workers creates the fund which is divided between employer and employed. It furnishes both the manufacturer's profits and the worker's wages. Before the War British labour leaders frequently asserted that the relative lowness of British wages was due to defective distribution, to the greed of the capitalists. The last column of the table establishes that before the War British wages were low because of the low value of net

production per worker. As no factory can be run at a loss for a prolonged period, no worker can hope to earn in wages more than the net value of his work, and if the net value of his labour comes on an average only to about £2 per week, he cannot hope to earn more than that sum, even if the manufacturers should be willing to work without profits. Even the advent of the Socialist millennium cannot extract high wages out of a low net production per worker. Before the War American wages were on an average about three times as high as were British wages simply because actual net production per worker was about three times as great in the United States as in Great Britain. According to official records the following wages, were currently paid on May 1, 1914, in some representative occupations in Chicago where good average wages rule:

		Dols.	£	s.	d.
Baker's foreman, day work ..	..	20	=4	0	0
" " night work ..	..	22	=4	8	0
" secondhands, day work ..	..	18	=3	12	0
" " night work ..	..	20	=4	0	0
Bricklayers .. .. ..	..	33	=6	12	0
Carpenters .. .. ..	..	28·60	=5	14	5
Builder's labourers .. .. ..	..	17·60	=3	10	5
Boiler-makers, manufacturing shops ..	..	21·60	=4	6	5
" outside .. .. ..	..	27·50	=5	10	0
Moulders .. .. ..	..	24	=4	16	0
Compositors, English .. .. ..	..	24	=4	16	0

The fact that before the War production per worker was on an average three times as great in the United States as in Great Britain is clearly established by the official figures given. It cannot be denied. However, as, generally speaking, the American workers work fewer hours per week than the British workers—there are, of course, some exceptions—the superiority of the American output per worker per hour is even greater than that

shown by the figures, which relate to their output per year and per week.

Why was in 1907-1909 an American worker able to do as much work as three English workers engaged in the identical callings?

A worker's output depends upon several factors. Among these the following two are particularly important: the type of machinery used and the power by which that machinery is driven. It is generally known that the United States are far ahead of Great Britain in the use of labour-saving machinery of the most perfect type. However, in addition to better machinery the American industries use far greater engine-power with which to keep their machines in motion. This may be seen from the following comparative figures:

HORSE-POWER USED IN THE TWENTY-SIX TRADES PREVIOUSLY ENUMERATED.

	No. of Workers.	Horse-Power used.	Horse-Power per Thousand Workers.
United States ..	1,982,777	4,779,225	2,409
United Kingdom	1,699,572	2,009,354	1,182

The startling inferiority of England's industrial output per worker is due partly to the indifference to progress and to the conservatism of the employers; partly, and probably principally, to the hostility of the British trade unions to mechanical improvements and to their pernicious policy of restricting output by all means in their power. In organisation, and especially in mechanical efficiency, the British industries, which formerly stood first in the world, are now far behind their American competitors. Many competent American observers have

pointed out to their countrymen the unwisdom of the policy of antagonising machinery and restricting output which has been pursued by the British trade unions, holding them up as a warning example. In the final Report of the American Industrial Commission of 1902 we read:

That the tendency of working-men is to restrict the output of their labour within more or less definite limits, which they have come to consider right and just, is undeniable. . . . The trade unions of Great Britain, for instance, have always been relatively stronger than those of America, and at the same time the tendency to fix definite limitations to the performance of each workman has been stronger there. One standard contrast between industrial conditions in Great Britain and in the United States is the greater freedom of the American workman from restrictive rules. To it is often attributed, in a large degree, his greater activity and effectiveness. The alleged decline of British industry is often laid at the door of the unions, by reason of their limitation of the product of their members.

. . . There can be little doubt that in the long run the interests of all classes will best be promoted by making the aggregate production of wealth as great as possible, so long as the workmen are not crowded beyond their strength. Certainly any general attempt to reduce the efficiency of American labour will check the progress of our industries, and will hamper us in competition with the other great producing nations. The high productivity of our industries at the present time is in part due to the superior methods and machinery used, but also in no small degree to the greater energy and skill, of the American labourer. That high degree of energy and skill is the cause, at least in part, of the higher wages which American working-men usually receive.

The Report "Regulation and Restriction of Output," published by the United States Commissioner of Labour in 1904, stated:

Perhaps the most significant fact brought about by this investigation is the striking difference between . . . Great Britain and the United States. . . . In Great Britain the justification of vested rights is avowed, and shows itself strongly in the dislike of capitalists to discard old and out-of-date machinery and methods of business, and in the obstacles placed by unionists in the way of machinery and division of labour which tend to eliminate their acquired skill. . . .

One can readily understand how difficult it is to make any change whatever in the English engineering industry. Each party knows exactly what it is getting when working on traditional lines with traditional machinery and old methods. The working-man is afraid that if any change, however slight, is made, his pay per unit of effort will be lowered. On the other hand, the employer is afraid that any proposed change of whatever nature will result in friction and controversy with his workmen. He fears that, should he reorganise his shop with expensive and more modern machinery, his employees would either refuse to work the new machines, or, not being familiar with the power of the machinery, would demand a rate of pay which would more than absorb the profits from its use, or, suspecting that they were not getting a sufficient rate of pay on the machine, would restrict the output so as to make the venture unprofitable.

The Report on Cotton Manufactures, published by the United States Tariff Board in 1912, said:

In the case of plain looms (not automatic) the English weaver seldom tends more than four looms, while in this country a weaver rarely tends less than six, and more frequently eight, or even twelve, if equipped with "warp-stop motions." Furthermore, English manufacturers make little use of automatic looms, of which there were less than 6,000 in May, 1911, in the whole of England, while in the United States there are well over 200,000. It is estimated that there are now about 10,000 of these looms in use in England, and about 15,000 on the Continent. Where automatic looms can be used, a single

weaver commonly tends twenty looms, and sometimes as many as twenty-eight. . . .

Several reasons are advanced for the delay in the more general adoption of the automatic loom in England. For one thing, the automatic loom costs about two and a half times the ordinary plain loom, and this has deterred many English mills already equipped with plain looms from adopting them. . . . An additional reason for the limited use of the automatic looms appears to be the objection to them of the labour unions, which have been afraid that they would be used to displace labour and to throw more work on the weaver without proportionately increasing his earnings.

Professor Taussig of Harvard University wrote in his excellent book *Some Aspects of the Tariff Question*, published in 1915:

Whatever be one's sympathy with labour organisations, it is not to be denied that a well-entrenched union tends to oppose the introduction of labour-saving devices. This attitude is the inevitable consequence of the dependence of laborers on hire by capitalist employers. The first effect of a new machine or a better rearrangement is to displace some labourers or to lower their pay. Moreover, the belief in "making work" is too deep-rooted to permit the installation of improved processes without strong though silent opposition. The mere existence of a powerful union—one not to be fought without heavy loss—has a benumbing influence, checking the very consideration of radical changes and tending to keep industry in its established grooves. Such was and is the influence of the strong organisation of the British iron-workers (the engineers); it led to struggles and strikes, in which the union, though sometimes beaten, retained a strong position. The American iron-makers, themselves men of overmastering temperament, and engaged in an industry where changes were rapid, shook loose from this sort of control. Beyond doubt, they were induced to adopt a drastic non-union policy by another circumstance: infraction of discipline by the union men and their

opposition to discharge of the insubordinate and incompetent. . . . All in all, the defeat of the union movement served to make the iron industry more free and more vigorous, so far as concerns the adyance of productive power and the cheapening of the products. . . .

In the Welsh tinplate industry the union long encouraged, and the workmen maintained, the policy of restricting output; and they opposed labour-saving devices. It would seem clear that the employers also, established as they had long been in apparently secure possession of the tinplate trade, fell into a certain stolid conservatism. Something like stagnation set in. . . .

Even for ordinary looms the English weavers oppose rearrangements and reductions in piece rates when improvements make it possible for a weaver to operate with the same effort and attention a larger number of looms. Hence, as was noted a moment ago, the effectiveness of labour is less in England, even where power looms of the same general type as in the United States are used. This difficulty is accentuated by the attitude of the English weavers toward the automatic loom. The weavers are afraid of the new device; it threatens to make employment less. They are not disposed to work the looms to their maximum output; they are loth to accept reduced piece-work rates, even though they can earn as much, even more. It is the familiar and almost inevitable disposition to "make work," the hostility to labour-saving appliances. It may not take the form of overt and unqualified refusal, but it leads to a silent, stolid opposition. Against this the employer cannot make headway without friction and loss, especially when his power of discharge and his ability to insist on the full productivity of machinery are hampered by a strong labour union.

Mr. F. W. Taylor, the eminent American engineer, who is revolutionising industry by his methods of organisation based on the minutest time-study and motion study, wrote in his book *Shop-Management*:

There is no question that the greater the daily output of the average individual in a trade, the greater will be

the average wages earned in the trade, and that in the long run turning out a large amount of work each day will give them higher wages, steadier and more work, instead of throwing them out of work. The worst thing that a labor union can do for its members in the long run is to limit the amount of work which they allow each workman to do in a day. . . .

Forbidding their members to do more than a given amount of work in a day has been the greatest mistake made by the English trade unions. The whole of that country is suffering more or less from this error now. Their workmen are for this reason receiving lower wages than they might get, and in many cases the men, under the influence of this idea, have grown so slow that they would find it difficult to do a good day's work even if public opinion encouraged them in it. . . . Any scheme which curtails the output should be recognised as a device for lowering wages in the long run.

Shortly before the War Mr. Taylor told me in a most interesting letter:

Years ago I arrived at the conclusion that under-production was the most serious problem which England had to face, and in my lectures in this country I have almost invariably spoken of this, pointing out the fact that the English people—including their political leaders and the leaders of the trade unions—were, as we put it, “barking up the wrong tree” in their effort to ameliorate the condition of the working-men.

No amount of readjustment of the joint reward of labour and capital can make the English working-men materially better off. Their only hope lies in an increase in individual output throughout the country.

I know case after case in England where they use exactly the same machines as in this country, but at far less horse-power and at far less speed than they should be run, and in a manner so as to turn out nothing like half the work that is being turned out in this country; and this is due, not to the lack of proper machinery, but to the almost unalterable determination of every workman in

England to turn out as little work as possible each day in return for the money which he receives. This with the English workmen is almost a religion.

In 1882, when I was a foreman in the machine-shop of the Midvale Steel Company, I first became thoroughly convinced of this fact. At that time the steel business in this country was comparatively in its infancy, and it was impossible for us to get skilled American workmen to carry on the steel business. There was at that time quite a large English immigration of skilled steel-workers in this country, and we had to depend for some time upon these men to do our work. At that time there were no trade unions in the steel business to speak of in this country (at least, they were not powerful). In spite of this fact, however, I soon found that every English workman was doing everything in his power, first, to restrict his own output, and second, to induce every other workman around him to restrict output to the maximum possible extent.

After one or two years of unremitting, kindly effort, I found that it was absolutely impossible to persuade the English workmen that it was to their interest to turn out a *proper day's work*, or even to stop them in their campaign of persuading and bulldozing American workmen into adopting their theories as to the necessity for restricting output. As a result of this we were compelled, in our steelworks, to absolutely make it a rule never to employ English workmen. From this time forward, even with unskilled American stock, we were able to make extremely rapid progress. Our workmen had not yet been inoculated with this terribly pernicious fallacy that restriction of output was a necessity for the prosperity of the workman.

To illustrate the restriction of output, we had in our works a locomotive and car-wheel tyre rolling machine, which was bought from Tangye Brothers in England, and all the apparatus connected with this machine came from England. We had a splendid set of English workmen—that is, they were fine fellows, and were very skilled workers and personally not lazy or shiftless—to run this machine. And yet, after working at it for three or four years, they refused to turn out more than fifteen tyres

per day. We called their attention over and over again to the fact that at this rate of production we were making no profit whatever; that it was absolutely necessary to increase the production of this machine. All of our persuasion and all of our talk was of no avail whatever and we were finally obliged to discharge the whole lot of them, to get every man outside of the works, and ourselves to train in an entirely new and green set of American workmen, who had never seen a machine of this sort. Within three months after training them in, we had increased the output from fifteen to twenty-five tyres a day, and this output went on, right on the same machine, increasing, until, three or four years later, we had an output of 150 tyres a day.

The great obstacle which you have to overcome in England is not the unwillingness of the manufacturers to use modern machinery, but the unwillingness of your workmen to properly use modern machinery after it is installed.

Mr. Samuel Gompers, the head of the United States Federation of Labour, stated on June 17, 1917, according to the *Observer* of July 8:

We are not going to have the trouble here that Britain had with restriction of production. There has not been any restriction of output for over thirty years in America. We in the United States have followed an entirely different policy. We say to the employers: "Bring in all the improved machinery and new tools that you can find. We will help to improve them still further, and we will get the utmost product out of them, but what we insist on is the limitation of the hours of labour for the individual to eight per day."

Even after the outbreak of War, when munitions, etc., were most urgently wanted, many British trade unions strove to continue limiting output in the traditional manner, partly by refusing to abandon their policy of "going slow," partly by opposing the admission of outsiders to their trades, of which they wished to preserve

the monopoly. Their opposition to increasing production to the utmost by speeding up production by means of improved machinery, by allowing existing machinery to be run at full speed, etc., and their opposition to augmenting the number of workers by what is called "dilution," has continued in many directions up to the present day. For instance, *The Times* of April 17, 1918, contained a letter from an English shipping man, dated New York, which stated:

A great many new yards have come into existence on this side recently. . . . When these yards get into proper swing, they will no doubt turn out tonnage equal to the worst submarine sinkings. The question of unskilled labour does not affect the people on this side as it does in England, as, not being hampered by trade unionism, they can turn a man out a riveter, caulkier, or any other branch of the trade within ten days. Practically everything is done with machinery, and hand-riveting is a thing of the past.

While the British Labour leaders and workers have deliberately kept production low by opposing the introduction of the most perfect labour-saving machinery—a policy which, to some extent, was also pursued by those short-sighted and unprogressive manufacturers who wished to preserve the methods of their grandfathers—the American manufacturers and their workers have consistently striven to increase production to the utmost by using the most modern and the most powerful machinery and the most modern methods. The policy of high production has given very large wages to the indifferently organised workers in the United States, while the policy of limiting output has given wages one-third as high as American wages to the strongly organised members of the powerful British trade unions. The progressive American policy of high production, adopted

by employers and employed alike, has enriched masters and men. The British policy of hostility to progress, the deliberate wasting of time and labour, has kept the workers poor, and it would ultimately have ruined the industries and the country. The War may have saved the situation, by waking up masters and men to their danger.

The abounding prosperity of the American manufacturing trades is due not only to the industrial policy of unceasing progress and of intensive production, pursued single-heartedly by the employers and their workers, but also to the economic policy adopted by the American Government and the American people. While successive English Governments have discouraged production by favouring the policy of *laissez faire*, the policy of one-sided free imports, which is usually miscalled Free Trade, successive American Governments and the American people have encouraged their home industries to the utmost by the policy of Protection. British Free Traders base, as a rule, their objection to Protection upon the argument that Protection creates general dearness, that it is a device for benefiting the rich at the cost of the poor, that it creates Trusts, that it causes industrial inefficiency, etc. These objections, which may be found in the textbooks of British Political Economy, may appear correct in theory—unfortunately British Political Economy is mainly occupied in spinning economic theories while disregarding economic facts—but they are contradicted by the experience of the United States. The ill-organised American workers receive under Protection wages which are about three times as high as are British wages, while the cost of living to the workers is only slightly higher in the United States than in Great Britain.

Trusts are not created by the tariff, but they have arisen because modern industry naturally tends towards

aggregation and concentration, because production is cheapest when it is most efficient, and because it is, as a rule, most efficient when it is carried on on the largest possible scale. Then only can organisation and mechanical outfit be brought to the highest degree of perfection.

The fact that protected industries, and even tariff protected Trusts, do not necessarily raise prices against the consumers, but frequently lower them as much as possible in order to preserve their pre-eminence by superior cheapness based on efficiency, may be seen by the price-history of iron and petroleum in the United States, both of which are highly protected, and both of which are handled by the most powerful Trusts in the world, the United States Steel Corporation and the Standard Oil Trust. During the last fifty years the prices of steel rails and of refined petroleum have been as follows:

<i>Year.</i>		<i>Price of Steel Rails per Ton.</i>	<i>Price of Refined Petroleum per Gallon in New York.</i>
1863	..	..	43 $\frac{3}{4}$
1873	..	120.58	18 $\frac{1}{2}$
1883	..	37.75	8 $\frac{1}{2}$
1893	..	28.12	5.24
1903	..	28.00	8.62
1913	..	28.00	6.30

Steel rails and petroleum and the productions of many other tariff-protected industries organised in Trusts have become steadily cheaper. In many years American steel rails were cheaper than British steel rails. The argument that Protection makes commodities dear and creates Trusts which charge outrageous prices is clearly disproved by the American price movements.

The argument that Protection enervates industry, destroys enterprise, and encourages inefficiency in the protected trades is likewise disproved by the experience of the United States and by that of Germany. Professor Taussig of Harvard University, who for many years favoured Free Trade, wrote in his judicious and non-partisan book *Some Aspects of the Tariff Question*:

It is certain that since the adoption of the protective system by the German Empire in 1879 there has been an extraordinary advance in all the technique and organisation of manufacturing industry. . . . In general it is as certain in the case of the United States as in that of Germany that the march of technical improvement has been extraordinarily rapid during the period of the maintenance of a high protective system. . . . All the general indications from the economic history of the United States are that protective duties in the great majority of cases have not served to bolster up antiquated establishments or to retard improvements.

It is a significant fact that before the War industries were most efficient in the highly protected United States and in Germany, and exceedingly inefficient in Free Trade Great Britain. That fact should give food for thought to the champions of Free Trade.

Protective tariffs undoubtedly encourage industry, and as prosperous, powerful and progressive industries tend towards concentration, it may perhaps be said that Protection favours manufacturing on the largest scale and therefore favours Trusts. However, it is better for a nation and its workers to be highly prosperous and to complain about Trusts, as many Americans do, than to suffer from stagnant, declining and decaying industries and to rejoice at the absence of Trusts. After all, the Trust is the most perfect form of individual organisation, and the abuse of its power can, and ought to, be controlled by the Government. It is worth pointing out

that in England, as in the United States, the most successful industries are carried on by huge Trusts, such as the Coats Thread Combination and the all-embracing Imperial Tobacco Company.

Protection reserves the home market to the national industries, gives them a considerable measure of security, and therefore favours industrial enterprise, especially on a large scale. While the policy of Free Trade has caused British industries to develop spasmodically, and has caused British manufacturing to be carried on inefficiently and wastefully in numerous small and medium-sized factories, the policy of giving security to the domestic industries adopted by the United States has favoured the concentration of the American industries and the rise of gigantic undertakings. The superior efficiency of enterprises carried on on the largest scale may be seen from the following figures extracted from the American Censuses of Production:

PRODUCTION OF INDUSTRIAL ESTABLISHMENTS HAVING A YEARLY OUTPUT OF \$1,000,000 AND MORE.

<i>Year.</i>	<i>No. of Wage-Earners Employed.</i>	<i>Percentage of All Workers.</i>	<i>Value of Productions.</i>	<i>Percentage of All Industrial Production.</i>
		<i>Per Cent.</i>	<i>Dols.</i>	<i>Per Cent.</i>
1904 ..	1,400,453	25·6	5,628,456,171	38·0
1909 ..	2,015,629	30·5	9,053,580,393	43·8
1914 ..	2,476,006	35·2	11,794,060,929	48·6

These figures are intensely interesting and extraordinarily important. In 1914 the largest industrial undertakings of the United States had together an output of £2,354,812,186, which was considerably larger than that of all the industries of the United Kingdom combined.

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These large undertakings more than doubled their output during the decade 1904-1914. The most remarkable fact, however, is that whereas the giant concerns employed only 35·2 per cent. of all the industrial workers, they produced no less than 48·6 per cent. of all the goods made in the United States, while the American industrial establishments of a smaller type employed 64·8 per cent. of the workers and produced with them only 51·4 per cent. of all the industrial goods made. These figures summarise in the briefest manner and prove absolutely the superior efficiency of production on the largest scale over production on a medium or a small scale. America's greatest industrial triumphs have been won by its most gigantic undertakings. The United States Steel Corporation produces every year more iron and steel than the whole of the United Kingdom. The Ford Automobile Works turn out every year more motor-cars than the whole of the United Kingdom, and some of the most efficient American railways system have each a mileage equalling, or exceeding, the railway mileage of the whole of Great Britain.

The facts and figures given in those pages prove that the American manufacturing industries owe their supremacy, not to the great natural resources of the country, as is often asserted, but to the wisdom and energy of the American people and their Government. They owe their industrial predominance mainly to the following causes: To the employment of the most perfect and the most powerful machinery; to their manufacturing on the largest possible scale in giant undertakings; to the policy of increasing production to the utmost which is pursued single-heartedly by masters and workers; and to the policy of encouragement and Protection pursued by successive American Governments.

The causes of America's industrial pre-eminence were

well summarised as follows in the final Report of the United States Industrial Commission of 1902:

The following propositions are obviously true:

1. The more completely the labouring population of the world, and that smaller population engaged in combining brain and muscle in production, are kept employed, the wealthier the world and the more rapid its advance, provided wastes are kept down to a minimum.

2. The smaller the number of non-producers among adults, the larger is the production, the more efficient the population as wealth-producers, and the most rapid its progress in wealth production and accumulation.

3. The more generally and effectively the manual labour of the world is aided and directed by brain, the higher is its efficiency.

4. The more generally machinery, and especially automatic machinery, can be made to re-enforce producers and distributers of wealth, the higher is the efficiency of wealth production. . . .

The fundamental elements of efficiency in industrial production, in the United States as in any country, are perhaps summed up as—

1. The character of the people, as given form by race, environment, and especially by social and political influences.

2. The physical condition of the people, as determined by their food, their habits of life, and exercise.

3. The skill and efficiency of the people as tool-users.

4. The quantity and productivity of tools, as determined by design and construction, and by combination of the man and the machine under all the preceding conditions.

5. The effective organisation of business for economising all productive and distributive forces.

Given a people of constitutional vigour and intelligence, with a talent for invention and construction, with political freedom and without social caste control, with a good system of education of mind and of hand, with abundance of wholesome food and a working day of proper length, with vocation and general opportunity free to all, and

they will soon acquire tools and machinery, and skill in their use, and will promptly attain ability to promote their own elevation in maximum degree in minimum time. These conditions are probably at the moment illustrated in larger measure in the industrial system of the United States than in any other nation, though progress toward their fulfilment is rapid over all the civilised world.

While the system of the successful American manufacturer and his labour-assisting machinery are also largely available to his foreign competitor, and are, in fact, sometimes employed, the fundamental fact in the difference between our industry and that of other countries seems to be (as testified, for example, by Mr. Hairrah, of the Midvale Steel Works) the difference between men and the races of men. The conservatism of Great Britain and the comparative lack of ambition, and in some cases of education, in other European countries, and, above all, their lack of freedom, social as well as political, often prevents them from availing themselves of known and approved methods, tools, and machinery. The American manufacturer thus finds it possible in many branches of business to compete successfully abroad with all nationalities, despite their lower wages, and to build up at home the most advanced civilisation.

It is possible, as more fully pointed out elsewhere, that the shorter and better-arranged workday of this country may have much to do with the maintained energy, alertness, and ambition of the American working-man, and thus may be an important factor in his remarkable supremacy in productive power and in excellence of products. The effect of this productivity of American labor, and of the better conditions of life coming from lessened hours of labour and from larger returns, is illustrated in a very impressive manner by the growth of the people in size and in their improved physical proportions. The development of American women in height and in increased vitality is a matter of common remark. Such are vital and social gains through improved methods of industry and general employment of labour-assisting machinery.

The weighty view of the American Industrial Commission should be made known to every British manufacturer and every British Labour leader and politician.

In industry as in war success is won not by those nations which possess the largest territory and the greatest latent resources, but by those which are best equipped, best organised and best directed. Science has abolished distance. Competition has become international, has become world-wide. Hence an industrial State which follows the policy of drift, of *laissez faire*, which entrusts the guidance of its industrial policy to doctrinaires and party politicians, and which deliberately discards the idea of national organisation and nation-wide co-operation, finds itself at the greatest disadvantage in competing with highly organised industrial nations directed by the best experts.

It has become generally recognised in Great Britain that industrial anarchy must be replaced by regulated national effort; that the State must harmonise and direct all the economic energies of the people. Men only differ as to whether the national industries should be guided and controlled by politicians or by bureaucrats or by experts.

Good leaders make good followers. Success in industry, as in war, depends chiefly upon good leadership. As in technical matters the expert is superior to the amateur, it is obvious that Britain's economic policy should no longer be determined by uncontrolled politicians who are mainly bent upon gaining votes. The organised representatives of business should make their influence felt in Parliament as they do in the United States. They should demand that the great economic interests of the nation should no longer be sacrificed to party political considerations and to the interests of importers and middlemen. They should insist upon the adoption of an

economic policy favouring production, and they should demand that the great Departments of State which control the national business should be organised in a businesslike manner, and be presided over, not by eminent politicians, but by the ablest business men."

Many abstract thinkers, political agitators, poets, novelists and visionaries unacquainted with the realities of business have urged that as economic individualism has proved a failure, it should be replaced by Socialism. Ideal Socialism does not deign to consider practical questions. It dreams of the Millennium. Its recommendations need, therefore, scarcely be considered. Practical Socialism means bureaucratic control, means control by salaried officials. The principle of successful industry is progress, is constant change and innovation. The principle of bureaucracy is conservatism, is the punctilious observance of, and the rigid adherence to, established rules and regulations; is hostility to change and therefore of progress. In business matters experience is more precious than imagination. If Great Britain wishes to recreate her industries she should rely for guidance neither on party politicians nor on visionaries, but on experts, on business men. As the productive industries are far more important as creators of wealth than is commerce, and as the manufacturing industries are England's principal resource, the nation should rely for guidance in economic matters, not on bankers, financiers, company promoters, stockbrokers, merchants, railway directors, and other non-producers who have dominated Parliament for a long time, but on the representatives of the productive industries which create the nation's solid wealth. England should follow no longer a middleman's policy, nor a foreign trade policy, nor a cotton policy, but a producer's policy in the fullest sense of the word. She should no longer pursue a short-sighted

sectional policy which benefits a clamorous or influential part of the community at the cost of all the others, but a broad national policy which fosters alike all the productive industries without neglecting trade, commerce and finance.

I have shown in these pages by means of the best official statistics available that before the War the American industrial worker produced on an average approximately three times as much goods, as much wealth, as the British industrial worker; that American wages were approximately three times as high as British wages. It follows that England can treble her production, her income and her wealth; that the British manufacturers can treble their profits and their workers can treble their wages by bringing British industrial efficiency up to the level of American industrial efficiency. Commerce, trade and banking would naturally benefit commensurately from such trebling of output, wealth and national income.

In the United States not all industrial undertakings are efficient. Some are extremely efficient and some are very inefficient. In the most efficient American factories production per man is about twice as great as it is in the case of the average American factory. It follows that England is able not merely to treble her income and wealth, but to sextuple her wealth and income by applying to her industries the best methods available, by bringing her industrial establishments up to the level of the best-equipped and best-managed American undertakings. Great Britain can easily pay for the War, however long it may last and however costly it may be, by Americanising her industries. Such a change would vastly benefit manufacturers and workers and the nation as a whole. However, all efforts at reforming the British industries will prove vain unless the workers abandon the suicidal policy of restricting output and antagonising

improved machinery and improved methods. The ancient guilds destroyed the industries which they were intended to promote by their policy of opposing progress and restricting output, by endeavouring to create an artificial monopoly of labour and an artificial scarcity of goods for the benefit of their members. The policy of the British trade unions may have similar consequences. Let us hope that it will be abandoned. The reform of the British industries can be carried out only with the cordial co-operation of the workers.

CHAPTER VI

EDUCATION AND ECONOMIC SUCCESS *

It is certain that henceforth the most powerful nation will be, not that which possesses the most extensive territory, nor that which has the largest population, but that which is the most industrious, the most skilful, the best educated, the most capable of utilising all the means and forces which science can place at man's disposal, and which enable him to triumph over matter. The greatest producer among nations may become the foremost power in the world.—*Report of French Commission on Technical Education of 1863.*

THE advance of nations in prosperity and power depends partly on the natural resources which they possess, partly on the activity and ability of the people who exploit them. The abilities of men are either inborn or acquired. Some people, such as the Greeks, Armenians, Jews and Chinese, are supposed to possess unusual natural gifts for commerce, exactly as the Czechs and gipsies are supposed to have an inborn talent for music, the Japanese a natural gift for the arts and handicrafts, etc. Nevertheless, we find that the greatest economic success has fallen, not to the nations which are naturally most gifted for trade, but to the perhaps less gifted, but best-educated nations which excel the more gifted ones in music and all other arts as well. It seems, therefore, that acquired ability is at least as valuable as inborn ability. With the rapid advance of science applied to commerce and industry, the importance of education, of scientific training, becomes, of course, greater and greater. Natural ability alone is

* From *The Fortnightly Review*, August and September, 1918.

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becoming of secondary importance in a world of highly trained specialists. After all, the naturally most able men, wrestlers, boxers, singers, painters, etc., arrive at the highest degree of perfection only by long-continued training, exactly as do the best-bred and best-endowed race-horses and bloodhounds.

Natural talent, unassisted by school education, may create most successful men of business and inventors, such as Rockefeller, Carnegie and Edison. These men were not school-taught. They educated themselves. However, it is worth noting that many of the great self-taught men have in after-life expressed keen regret at their lack of education, and some of them are so strongly convinced of its advantage that they have devoted countless millions to educational purposes, as have Rockefeller, Carnegie and other most successful American business men.

Education may be either ornamental or practical. Unfortunately, British education has been rather the former than the latter. It has been an education which has been designed by clergymen and classical scholars for the use of a leisured class which possesses ample fixed incomes, and which, therefore, needs no preparation for the struggle of life. English education has rather developed culture, character and manners than the practical abilities. We live in a world of keen competition. The principal aim of the school should be to supply the growing generation with useful knowledge, to sharpen its intelligence, and to teach the young to think correctly and, before all, to work conscientiously, and to love work. Cramming, as practised in England and in other countries as well, may possibly develop the memory, but is destructive of the critical faculty. It deadens the intelligence. Besides, at the English High Schools and Universities—but not so much at the Scotch—the students learn chiefly

how to idle more or less gracefully and to toy with work. To take a keen interest in one's work, to discuss one's studies, to live for one's work, is "bad form" in England. In the United States and in Germany study is taken far more seriously. The difference between education in England and education in Germany and the United States is very striking. The advance of nations depends largely on the spirit which education in the widest sense of the word has raised among them. The rapid economic advance of the United States and of Germany and the relative stagnation of the British industries must be largely attributed to educational causes. Men who have received a gentleman's education, who have acquired the spirit and the manners of the leisured class, will be beaten in the race for success by men who love work and who have developed their abilities to the highest point.

The defects of English education—especially its obsolescence and its contempt of the useful and the necessary—have brought it into disrepute with practical men. After all, education should prepare men and women for their future tasks. The Report of the United States Industrial Commission of 1902 stated correctly:

Only a very small fraction of the people feel able to pursue a purely literary and liberal course of culture beyond the years of childhood. Any education that is to attract the mass of the people after these years are passed must have a direct and evident bearing upon the activities of adult life.

Education may be either autocratic or democratic in character. English educationalists have hitherto, and I believe mistakenly, studied almost exclusively the educational system of autocratic Germany, and have endeavoured to organise British education upon the German model. Hitherto American education has enjoyed

little prestige abroad, largely because the United States possess a considerable number of people unable to write or read, while Germany possesses practically none. Yet the mere fact of America's success in many directions in which trained ability of the highest kind is required might have convinced educationalists that the American educative system must be a most powerful engine for good. It is true a large number of Americans can neither read nor write. This is, after all, not unnatural. In a country which in part is sparsely settled and where distances are enormous the creation of schools for all is exceedingly difficult, and in view of the independence of the American character it is impossible to compel every child to go to school, as is done in Germany. Moreover, the large majority of American analphabets is furnished by negroes whose fathers were slaves and by immigrants from the illiterate South and East of Europe. In 1910 there were, according to the Census, in the United States 5,516,163 illiterates aged ten years or over. Of these, 2,227,731 were negroes, 1,650,361 were foreign-born whites, 151,388 were whites of foreign or mixed parentage, and only 1,378,884 were native-born whites of native parentage. The great majority of the latter were "mean whites" living among the negroes in the South. Only those disparage American education who are neither acquainted with its difficulties nor with its achievements.

The practical success of the United States has been as striking as that of Germany. It is largely due to the educational system of the Great Republic. Let us, then, see what we may learn from America's example and experience.

Education may be disseminated by the schools which train the young and by other agencies which instruct and lead the grown-up people in after-years. The latter is at

least as important as the former. Both branches of the education will be considered in the following pages.

The Puritans who founded the American colonies were keenly interested in national education. The Americans were among the best-read and the best-educated nations since the beginning of their history. Education has always been far more advanced in the United States than in England. The fathers of the Republic believed that only a well-informed and well-educated nation could be happy, prosperous and free, and they acted in accordance with that conviction. From the earliest days the expenditure of the Americans on education has been prodigious, and it has been increasing constantly and more and more rapidly ever since. Of late years the progress of America's education has been absolutely gigantic. According to some America has become education-mad. The recent expansion of American education may in part be gauged from the following most interesting figures:

PROGRESS OF AMERICAN PUBLIC SCHOOLS.

<i>Year.</i>	<i>Population Five to Eighteen Years Old.</i>	<i>Average Daily School Attendance.</i>	<i>Students in Universities, College, and Schools of Technology.</i>	<i>Total Educational Expenditure.</i>
1871 ..	12,305,600	4,545,317	(1873) 23,392	69,107,612
1876 ..	13,708,000	5,291,376	32,540	83,082,578
1881 ..	15,379,290	6,145,932	39,048	83,642,964
1886 ..	17,122,060	7,526,351	40,421	113,322,545
1891 ..	18,897,076	8,408,323	58,405	147,494,809
1896 ..	20,863,807	9,781,475	86,864	183,498,965
1901 ..	21,982,797	10,714,613	103,351	227,465,664
1906 ..	23,792,723	11,712,300	129,181	307,765,659
1911 ..	24,745,562	12,871,980	183,572	446,726,929
1915 ..	26,425,100	14,964,886	237,011	605,480,785

While between 1871 and 1915 the number of the people between the ages of five and eighteen has a little more

than doubled, the average daily attendance at the schools has considerably more than trebled. In 1871 the average daily attendance amounted only to 36·9 per cent. of the people between the ages of five and eighteen, but by 1915 it had grown to 56·6 per cent.

General education has spread considerably in the United States, but higher education has increased at a most extraordinary and almost incredible rate. Between 1873 and 1915, while the population of school age has a little more than doubled, the number of students at the American Universities, colleges and schools of technology has increased more than tenfold. During the nine years from 1906 to 1915 the number of American High School students has almost doubled. It is also worth noting that between 1871 and 1915 the expenditure of the public schools has increased nearly ninefold, and that during the short space during 1906 and 1915 school expenditure has almost doubled.

The figures given in the table apply only to the daily average attendance at the public schools and to the expenditure of these establishments. The figures relating to the number of scholars enrolled at the various schools, both public and private, and to the expenditure of the public and private schools combined, are, of course, larger. The Report of the United States Commissioner of Education for 1914 stated:

In round numbers there were 22,000,000 persons enrolled in educational establishments in the United States in 1914. . . . The teachers for this educational army numbered 700,000, of whom 566,000 were in public schools. . . . The cost of education for the year, as nearly as can be estimated, was \$750,000,000. This three-quarters of a billion is a relatively small amount when compared with other items in the public expense.

In 1914 the United States spent on education twice as much as the United Kingdom spent before the War on its Army and Navy combined. In 1914 the United States spent almost exactly as much on education as the United Kingdom spent before the War under the Budget on its Army, its Navy, its whole Civil Service, on Old Age Pensions, Public Education, National Insurance and Labour Exchanges, and the interest and sinking fund of the National Debt combined. Yet the American Commissioner of Education described that gigantic expenditure as being "relatively small!" As I said before, the Americans have become education-mad. However, that is a very healthy form of insanity.

As the progress of nations depends rather on the trained ability of its leaders than on that of the rank and file, a good higher education is particularly important, for it furnishes able scientists, engineers, chemists, organisers, administrators and other experts whose activity determines the fate of nations. The Americans have promoted higher education in all its branches with the utmost enthusiasm and energy. That may be seen by the fact that between 1873 and 1915 the attendance at the Universities and other High Schools has increased more than tenfold, and by other indications as well. The growth of the American Universities and of the other High Schools has been greatly promoted by the wealthy citizens, and especially by the "captains of industry," by the great self-made men who, having lacked a proper education, value it most highly. An ever-growing stream of gifts is flowing towards the educational establishments of the United States. How vast and how regular these gifts are and how rapidly they are increasing may be seen from the following figures supplied by the United States Commissioner of Education:

GIFTS AND BEQUESTS TO EDUCATION.

	Dols.		Dols.
In 1874	6,053,804	In 1904	17,261,375
In 1875	4,126,562	In 1905	21,827,875
In 1876	4,691,845	In 1906	23,347,070
In 1877	3,015,256	In 1907	28,585,780
In 1878	3,103,289	In 1908	19,763,421
In 1879	5,249,810	In 1909	21,192,450
In 1880	5,518,501	In 1910	24,755,663
In 1881	7,440,224	In 1911	27,634,029
In 1882	?	In 1912	30,061,310
In 1883	7,141,363	In 1913	29,651,879
In 1884	11,270,286	In 1914	31,357,398

Between 1871 and 1914, \$584,418,082, or nearly £120,000,000, were thus given to the American schools. Whereas wealthy Englishmen give and bequeath money most freely to charities, hospitals, churches and missionary enterprises, endeavouring to help those who are already broken, wealthy Americans strive to elevate the nation, to enrich the people and to prevent man from becoming poor and diseased, by promoting their education and by making them useful citizens. Of the money given or bequeathed to education the bulk goes to the High Schools, and serves to create leaders of men who are the most valuable citizens of the State. The gifts and bequests devoted to education in 1914 were distributed as follows:

	Dols.
To Universities and Colleges	26,670,017
To Schools of Theology	1,558,281
To Schools of Medicine	1,495,773
To Schools of Law	203,067
To Normal Schools	723,714
To Private High Schools	706,546
	<hr/> 31,357,398

Care of the body is more immediately necessary than care of the soul. It will be noticed that the funds given to schools of theology are extremely small.

Among the greatest benefactors to education were Rockefeller and Carnegie, two men who, almost without education, began life in the humblest circumstances. How greatly these two men prize education may be seen from the following list of their gifts for educational purposes, which is probably incomplete, and which has been extracted from Koester's book, *The Price of Inefficiency*, New York, 1913:

ROCKEFELLER'S GIFTS.

	Dols.
General Education Fund	53,000,000
University of Chicago	23,309,000
Institute of Medical Research	8,240,000
Rush Medical College	6,000,000
Barnard College	1,375,000
Yale University	1,300,000
Harvard University	1,000,000
South Education Fund	1,125,000
Small colleges in United States	<hr/> 23,000,000
	118,349,000

CARNEGIE'S GIFTS.

	Dols.
Carnegie Institute, Pittsburg (Research) ..	16,000,000
Carnegie Institute, Washington	25,000,000
Scotch Universities	10,000,000
Polytechnic School, Pittsburg	2,000,000
Small colleges in United States	20,000,000
Carnegie Corporation of New York (Research and Education)	25,000,000
Libraries	<hr/> 52,000,000
	150,000,000

Owing to the generosity of their numerous wealthy patrons, the American Universities and other High Schools are magnificently furnished with all conveniences, and the most perfect and most costly scientific apparatus. Their property was officially classified and valued in 1914 as follows:

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PROPERTIES OF UNIVERSITIES, COLLEGES AND TECHNOLOGICAL SCHOOLS IN 1914.

	Dols.
Value of ground	87,757,360
Value of buildings	281,665,426
Value of furniture, books and apparatus ..	70,113,586
Productive funds	362,742,823
	<hr/>
	802,279,195

The American students study under the best possible conditions. The vastness of the capital invested in the Universities, etc., enables us to gauge the excellence of their accommodation and of their scientific appliances.

All the leading Universities and schools possess vast funds, owing to the munificence of opulent Americans. How vast they are may be seen from the following figures:

ENDOWMENT FUNDS IN 1914.

	Dols.
Columbia University	30,770,868
Leland Stanford University	23,961,338
Harvard University	21,912,853
Chicago University	18,598,273
Yale University	15,379,363
Cornell University	14,145,873
Rice Institute	10,000,000
Carnegie Institute	8,000,000
Johns Hopkins	6,265,480
Washington University	6,156,223
Pennsylvania University	5,206,308
Princeton	5,194,861

In 1914 the yearly income of some of the best-known Universities was as follows:

	Dols.
Cornell University	6,790,260
Columbia University	6,686,869
Harvard University	4,287,185
Wisconsin University	3,101,372
Minnesota University	3,033,891

	<i>Dols.</i>
Illinois University	2,824,053
Yale University	2,600,629
California University	2,499,457
Pennsylvania University	1,679,809
Washington University	1,627,499

Universities which possess such gigantic funds and such huge yearly incomes are naturally provided in a most lavish manner with the best of everything. Notwithstanding their comparatively recent creation, American Universities have excellent libraries. In 1914 Harvard had 1,083,750 volumes, Yale 1,000,000 volumes, Columbia 550,429 volumes, Cornell 439,517 volumes, Chicago 431,362 volumes, Pennsylvania 421,097 volumes, etc. Altogether the American Universities possessed 18,199,354 volumes in that year.

The United States are the country of mainmoth undertakings of every kind. However, the American Universities deserve admiration not only because of the great and rapidly increasing number of their students, because of the vastness of their financial resources and the excellence of their mechanical apparatus, but also because of their success in training large numbers of able men and women, and in promoting science and research. The American Universities are ahead of the European Universities in some subjects, such as engineering, law, dentistry, etc., but they lag behind in others, such as medicine. However, their shortcomings are being remedied with rapidity and energy.

Of course, the numerous Universities vary in efficiency. Some of the Eastern institutions have arrived at maturity, and need not fear comparison with any of the most famous institutions of Europe. On the other hand, some of the young Universities in the West and South suffer from lack of students, lack of eminent teachers, and lack

of means, a condition which is only natural in a new country which is overstocked with Universities and colleges. After all, too many schools is better than too few.

The great efficiency of the fully developed University is largely ascribable to their organisation. The American people believe in one-man Government and in youth. Exactly as the executive power of the Great Republic is vested, not in a jointly responsible Cabinet, but in a single man, the President, who is possessed of almost regal power and authority, the direction of the Universities is entrusted, not to a committee of professors, as in Europe, but to a President who nominally carries out the decisions of the Trustees, but who in reality is the supreme head. Presidents can make or mar a University. Professor Eliot of Harvard University became President of that institution in 1869, at the early age of thirty-five, and he has directed it during forty years. The premier University, and the Universities in general, owe much to President Eliot, who has completely reformed American University teaching.

It is often asserted, and it is widely believed, that in the land of the almighty dollar money governs everything, that idealism is non-existent. That assertion is disproved by the fact that many of the ablest Americans, who could earn large incomes in private employment, have devoted their life to science or to administration, although the United States pay totally inadequate salaries to professors and to high Government officials. As a rule, full professors receive a salary of from \$3,000 to \$5,000 per year, assistant professors are given from \$1,800 to \$3,000 per year, and University instructors are paid from \$1,000 to \$2,000 per year. The salaries of the great experts employed in the Government service are similarly low. In view of the high level of general earnings—a brick-

layer can earn as much as a University professor—and the high standard of living in the United States, the professorial salaries paid are extremely unsatisfactory. Professors and high officials live in poverty unless they possess private means. The fact that, nevertheless, some of the most eminent American engineers, chemists, lawyers, patent specialists, etc., may be found at the Universities and in Government offices is an eloquent proof of American idealism and of American devotion to science.

The American University professors suffer not only from insufficiency of remuneration, but also from insecurity of tenure. As a rule instructors are engaged by the year, assistant professors for three years, and full professors "during good behaviour" or "at the pleasure of the Trustees," in the terms of their contract. Life professorships with pensions after retirement on the European model are practically unknown. Hence professors cannot consider their position as a sinecure, as do so many European professors, but have to justify their existence by constant progress and useful activity. If they fail to keep abreast of the times, they may lose their position and their income.

The development of the Universities proper has been tremendous, but that of the agricultural and mechanical colleges has been even more extraordinary. By an Act of Congress of July 2, 1862, passed in the midst of the Civil War, Federal Land Grants were made for the endowment of agricultural and mechanical colleges. These institutions were rapidly established in all the States and territories of the Union. They were intended to supply in the first place useful practical knowledge to those engaged in agriculture, engineering, manufacturing and the handicrafts, but they have gradually increased their scope to such an extent that some of them are

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emulating the Universities. The incredibly rapid development of these institutions during recent years may be seen from the following table:

AGRICULTURAL AND MECHANICAL COLLEGES.

<i>Year.</i>	<i>Yearly Income.</i>	<i>Number of Students.</i>	<i>Value of Farms.</i>	<i>Value of All Property.</i>
	<i>Dols.</i>		<i>Dols.</i>	<i>Dols.</i>
1892 ..	4,038,833	13,786	2,776,462	7,012,106
1895 ..	4,179,662	15,973	1,630,267	9,711,975
1898 ..	5,999,916	20,974	2,580,799	20,305,675
1901 ..	7,325,604	29,950	4,540,014	68,084,925
1904 ..	10,885,550	37,135	6,350,992	76,564,424
1907 ..	14,492,884	42,424	11,055,845	97,446,701
1910 ..	20,890,610	60,625	21,070,151	117,843,129
1914 ..	34,891,224	69,132	23,981,085	160,298,353

Between 1892 and 1914 the number of students at the agricultural and mechanical colleges has increased five-fold. The yearly income and the value of the demonstration farms of these institutions has increased nearly nine-fold, and the value of all their property nearly twenty-three-fold. In 1914 their property was officially classified as follows:

Value of farms and grounds ..	<i>Dols.</i>
,, buildings	23,981,085
,, apparatus and machinery	51,825,766
,, libraries	16,842,273
,, live stock	5,996,787
Land Grant Funds	1,686,282
Other permanent funds	18,010,398
Total	<u>160,298,353</u>

The agricultural and mechanical colleges are the Universities of the people in the backwoods, are the High Schools of the poor. By their practical instruction they have vastly benefited the people.

In addition to the agricultural and mechanical colleges, the United States possess hundreds of institutions of every kind which provide High School tuition in all the arts and sciences. They cater for general students and for specialists, but they are too numerous and too varied to describe. At any rate, men and women desirous of self-improvement, of earnest study, of scientific research, can find suitable institutions in every part of the Union.

The United States owe undoubtedly much of their progress to the ability of their leaders. The high ability displayed by American scientists, architects, engineers, chemists, etc., is largely due to the excellence of their educational system, and, before all, to the fact that education has been so lavishly endowed by the Federal Government, the individual States, the cities and towns, and by wealthy individuals, that opportunities to acquire knowledge from the best experts and to rise to the highest positions in life have been brought to the door of the humblest dwellings. In the United States the best education is not exclusive. It is not reserved to the select few. The highest and the most thorough education is not the privilege of a narrow class, but has been brought within the reach of all, even of the poorest. Talent is not starved for lack of opportunity. The Americans have adopted Napoleon's motto, "La carrière ouverte aux talents." The ability of America's leaders in the economic field is so great because the leaders are selected, not from a small number of privileged individuals, but from the whole body of a great nation. Lord Bryce wrote in his excellent work *The American Commonwealth*:

It is the glory of the American Universities, as of those of Scotland and Germany, to be freely accessible to all classes of the people. . . .

In every civilised country the march of scientific discovery has led to an enormous increase in the applications

of science to productive industry. This has been followed by a demand for men conversant with these applications, and to supply that demand the teaching of applied science has been provided on a scale undreamed of even a generation ago. Nowhere, perhaps not even in Germany, has this movement gone so fast or so far as in the United States. While the existing Universities have been enlarged by the addition of scientific departments, a host of independent or affiliated scientific schools and technical institutes have sprung up. Most of these have been planted in the cities, but the agricultural colleges, perhaps the most numerous class, are often placed in rural areas. Of these latter, many are really secondary schools, or are teaching engineering quite as much as agriculture, but some of the best have experimental farms attached to them. . . .

One who surveys the progress of the United States during the last fifteen or twenty years finds nothing more significant than the growth of the Universities in number, in wealth, and in the increased attendance of students from all ranks of life. They have become national and popular in a sense never attained before in any country. . . .

The Universities and colleges have, taken as a whole, rendered an immense service. They have brought instruction within the reach of every boy and girl of every class. They receive a larger proportion of the youthful population than do any similar institutions in any other country. They are resorted to hardly less by those who mean to tread the paths of commerce or industry than by those who prepare themselves for a learned profession. They have turned a University course from being the luxury which it has been in the Old World into being almost a necessary of life. And they have so expanded their educational scheme as to provide (in the larger institutions) instruction in almost every subject in which men and women are likely to ask for it.

Guiteau wrote in his book *Government and Politics in the United States*:

From the first century A.D. down to the very beginning of the nineteenth century, education was almost universally

controlled by the Church, and was confined to the wealthier classes, while to-day education is generally recognised as a function of the State, and its benefits are freely offered to all children, the expense being borne by the community. Nowhere has this modern conception of free public education been more fully realised than in the United States.

Progressive and open-minded men never cease learning. The acquisition of knowledge comes to an end only with the grave. Education in the widest sense of the word does not end with the school and University. Mature men may be taught by instruction suitably given and by example. American statesmen, discarding disdainfully the doctrines of *laissez faire*, have striven to foster the national industries, not only by a protective tariff, but by all other available means as well, and they have endeavoured particularly to increase the economic efficiency of the people both by the tuition of grown-up individuals and by example.

The great characteristics of American education, as given at the schools, colleges and Universities, are two: prodigal lavishness and great practical efficiency. These two characteristics are to be found also in the education which the American Government supplies to its mature citizens.

The great Government departments of the Union and of the individual States composing it, exist not only for the purpose of administration, but for that of education as well. The greatest and the most important educational centre of the United States is situated, not in New York or in Boston, not in Chicago or in Philadelphia, but in Washington, the Federal Capital. In 1917 Professor Caullery of the Sorbonne, a French Exchange professor, who lectured at Harvard in 1916, published a little book, *Les Universités et la Vie Scientifique aux États-Unis*.

The longest chapter contained in it describes the scientific Government departments at Washington.¹ In that chapter we read:

The Federal Government controls only a small portion of the national life, because of the sovereignty possessed by the individual States. Nevertheless, it has been able to create some institutions which are far more important than similar institutions which may be found elsewhere. Among these the Scientific Departments attached to the different branches of the Administration are particularly remarkable. During the last half century the practical value of science has been fully realised by the Americans, and they have devoted to science ever-increasing amounts for the good of the country. . . .

Washington, the seat of the Federal Government, has become an important centre of science through the growth of the Scientific Government Departments. The United States possess a Washington Science, which is often compared and contrasted with College Science, with the Science of the Universities. . . . The important point to remember is that the Federal Government believes in the practical value of science and that the American Government, by promoting science in its departments, has undoubtedly been largely instrumental for the increase in the productive power of the nation and for the disappearance of the deadly spirit of conservatism and routine from economic life.

As an adequate account of the Scientific Department in Washington and of their educational activities and achievements would require a large volume, I would briefly describe one or two of these departments in the words of the most authoritative exponents.

Among the scientific and educational departments of the United States, the Department of Agriculture is the largest and it is particularly interesting because the value of the services which it has rendered is clear to all. The Americans are an intensely practical people. Hence

the practical utility of an American public institution may be gauged to some extent by the amount of public money which is devoted to its support and which is spent by it. The growth of the United States Department of Agriculture in importance, in activity and in general esteem may therefore be gauged from the following extraordinary figures:

EXPENDITURE OF THE UNITED STATES DEPARTMENT OF
AGRICULTURE.

<i>Year.</i>	<i>Dols.</i>
In 1842	1,000
In 1850	5,500
In 1860	40,000
In 1870	156,440
In 1880	199,500
In 1890	1,170,139
In 1900	3,625,851
In 1910	16,976,022
In 1916	28,031,540

The funds voted for the Department of Agriculture have increased nearly two hundredfold since 1870 and nearly eightfold since 1900.

Large and small are terms of comparison. The importance of the amount voted to the Department of Agriculture may be seen by comparison with the funds voted by Parliament for the British Board of Agriculture and Fisheries. The two Boards compare financially as follows:

Money voted for the United States Board of Agriculture in 1916	<i>Dols.</i>	<i>£</i>
	28,031,540	= 5,606,308
Money voted for the British Board of Agriculture in 1916		341,648
Salaries paid by United States Board of Agriculture in 1916	10,436,792	= 2,087,358
Salaries paid by the British Board of Agriculture in 1916		146,118

The United States Board of Agriculture spent in 1916 fourteen times as much in salaries as the British Board of Agriculture, and spent altogether sixteen and a half times as much as the corresponding British institution.

In 1903, when the American Board of Agriculture was still comparatively small and unimportant, when it spent only about £1,000,000 per year, or less than one-fifth as much as it is spending now, the Moseley Educational Commission visited the United States. Professor Henry E. Armstrong, F.R.S., the distinguished chemist, accompanied it, and he reported after his return:

SCIENCE IN THE SERVICE OF THE STATE.—The most striking illustrations of American organising ability are to be met with at Washington. So far as I am aware, there is nothing anywhere to compare with the way in which science is being utilised in the service of the State by the U.S. Department of Agriculture, which is located in the capital. . . .

The Department now comprises the following branches:

Office of the Secretary.

The Weather Bureau.

Bureau of Animal Industry.

„ Plant Industry.

„ Forestry.

„ Chemistry.

„ Soils.

„ Statistics.

Division of Entomology.

„ Biological Survey.

„ Accounts and Disbursements.

„ Publications.

Office of Experimental Stations.

„ Public Road Inquiries.

Library.

. . . On July 1, 1902, the staff numbered 3,789, of whom 1,209 were executive officers, clerks and messengers, 2,081 scientific investigators, and 499 labourers.

The Agricultural Department in Washington is not

merely an office—it is also a busy hive of research. A large number of laboratories are attached to it, in which investigations are being carried on, bearing, in one way or another, on problems in agriculture. Much research work is also done in the State Experiment Stations; in the main, however, these serve to bring under the notice of farmers the importance of science to agriculture by demonstrating the value of methods of cultivation, manures, etc. There is no question that the research work done under the auspices of the Agricultural Department and in the experiment stations is of the very greatest value, and is contributing most materially to the development of agricultural industry. To take only one illustration, whereas, in 1884, the amount of sugar made from sugar-beet was only about 300 tons, the beet crop of the past year is estimated to yield 400,000 tons; the amount of sugar made in the United States from the sugar-cane being only about 300,000 tons. This extraordinary increase, I believe, is due practically entirely to the influence exercised from Washington. A map showing the regions in which the temperature conditions were favourable to the growth of the sugar-beet was first prepared by Dr. Wiley, the head of the Bureau of Chemistry. Seed was then issued to farmers in various districts, together with directions how it was to be dealt with, and the produce was subsequently examined for sugar; in this way it was determined where the beet could be grown successfully. The advantages to be derived from the cultivation of the crop were also made clear to the farmers. An industry of great importance has in this way been gradually brought into existence; at the same time, farming practice has been vastly improved and land has increased considerably in value, owing to its having received proper treatment.

The Department is undoubtedly exercising an extraordinary influence on the education of farmers by distributing literature among them, and by encouraging and helping them in every possible way; indeed, it is certain that, by one means or another, the American farmer is gradually being led to see that science is indispensable to agriculture. . . .

One branch of work initiated in the Office of Experi-

ment Stations at Washington of extreme importance, to which reference should also be made, is that relating to the nutrition of man, which has been carried out in various parts of the States under the supervision of my friend Professor Atwater—a fellow-student with me in Germany in years gone by—who initiated the inquiry in 1877. The scope and results of the investigation are described in the Report of the Director of Experiment Stations for the year ending June, 1901. Undoubtedly the most important and valuable part of this work has been that done during recent years at the Wesleyan University, Middletown, Conn., where a large respiration chamber has been erected and brought to a remarkable state of perfection by Professors Atwater and Benedict. The installation is a very costly one. It is possible for a man to live within this chamber for days or even weeks, and for account to be kept during the whole time, not only of the products of respiration, but also of the amount of heat given out and the oxygen consumed, with a degree of accuracy equal to that with which ordinary analyses are carried out in a laboratory. No better illustration can be given of the amount of thought and care which is now being devoted to investigations of practical importance in the United States. I went specially to Middletown to examine the apparatus, and was gratified beyond measure, to see it alone was worth a pilgrimage to America. The investigations which can be carried out with such a chamber are of far-reaching importance, and touch very closely on the domain of household economics. It is much to be desired that we, on this side, should be able to do similar work.

The Geological Survey is also a well-organised department in Washington. The wealth of material at the disposal of American geologists is extraordinary. If opportunity beget supply, we may look to America as the breeding-ground of geologists in the future. Besides field work and the attendant office work, the department now carries on scientific research work on geological problems. It has a well-equipped Chemical Department, at the head of which is Professor Clarke, who a few months ago delivered in Manchester the lecture commemorative of the centenary of Dalton's atomic theory. Much

valuable work has been done in this department, which is now quite the seat of authority in mineral analysis, Dr. Hillebrand, the senior member of Professor Clarke's staff, being probably the most accomplished and experienced analyst of the day.

Lastly, it may be mentioned that a Bureau of Standards has recently been established at Washington to do work on the lines of that done by our Standards Department, the Board of Trade and the National Physical Laboratory, but with a wider outlook than any of these and well provided with funds.

When we consider how unco-ordinated our efforts are, how little public appreciation exists of the value of science to the community, it is impossible not to feel envious of what is going on in Washington. It would well repay us to inquire very fully into the causes which have operated to produce a willingness in America to listen to counsel which here passes altogether unheeded. Something must be done to create a public belief in the value of knowledge, which will lead us to co-ordinate our scattered efforts. So long as our outlook is merely insular, the future may appear to afford little promise; but if we consider the possibilities the Empire affords, there is no reason why our outlook should not be as hopeful as that of the United States. The resources at our disposal, the agricultural possibilities within the Empire, may well be regarded as boundless; but we need to make ourselves acquainted with them and to take concerted measures to exploit them. To this end, it is all-important to constitute effective central organisations in this country similar to those which exist in the United States.

In 1902, when the United States Department of Agriculture spent only about £1,000,000 per year, it had a staff of nearly 4,000, of whom more than 2,000 were scientific investigators. Since then the staff has been more than quadrupled. The United States Secretary of Agriculture commands now a veritable army of experts.

A University has a twofold purpose: research and

tuition. The United States Board of Agriculture acts like a gigantic University. It carries out research by thousands of experts of its own. In addition, research is carried on independently by thousands of experts employed by the richly endowed Departments of Agriculture belonging to the individual States. The results of these investigations and of the experiments made by private societies and individuals are collected, sifted and classified at Washington, and are then communicated to the agriculturists by means of pamphlets, books, etc. As adjectives do not suffice to describe the colossal literary activity, the teaching activity, of the United States Board of Agriculture, I would endeavour to describe it by means of figures. Mr. J. A. Arnold, the Chief of the Division of Publications, in his Report for 1910, stated that in the course of that year the United States Board of Agriculture issued 1,983 publications which together contained 42,503 pages. The number of pages published in that single year by the American agricultural authorities was twice as great as the number of pages contained in the *Encyclopaedia Britannica*. The entire literature published in 1910 by the Board of Agriculture came to 25,190,469 copies, of which 4,424,300 were issued by the Bureau of Plant Industry, 4,034,000 by the Office of Experiments Stations, 1,703,225 by the Bureau of Animal Industry, etc. Commenting upon this incredible and almost unimaginable output, Mr. Arnold stated:

No other Government publishes as many public documents as the United States, and no other executive department of the Government issues as many publications as the Department of Agriculture. It is the function of this Department to acquire and disseminate useful information in regard to agriculture. With the rapid increase in population of the country, and the consequent

increasing demand for publications, it became apparent many years ago that the Department could probably never secure an appropriation sufficient for printing enough documents to supply the demand. Congress has, however, provided a solution of the problem by authorising the sale of Government publications at a nominal price. Under the operation of a provision of the law, the Superintendent of Documents can reprint and sell any publication, so long as there is a demand for it, without any expense to this Department. Consequently, by paying the price affixed by law, applicants are able to secure documents which can no longer be obtained from the Department, and which would not otherwise be available, owing to the insufficiency of the department's fund for printing additional copies.

The United States Department of Agriculture teaches not only by means of its publications—it might fitly be described as the greatest correspondence school in the world—but also by lecturing, as does every University. However, while at the Universities the students have to come to the lecturers, the lecturers and demonstrators of the Department of Agriculture go to the agriculturists. The United States Department of Agriculture found it particularly difficult to improve cultivation among the backward and largely illiterate negroes in the South. Therefore it resolved to reform their methods by "agents in the field"; and as negroes are often extremely suspicious of white men when they come offering them advice for nothing, many coloured lecturers and demonstrators are especially trained for the purpose. In his Report for 1910 the Secretary of Agriculture stated with regard to the activity of his Department in the South:

From 1904 to 1909 there was an increase from 1 to 362 agents in the field. The number has now reached 450, and the demand for more is urgent. More than 75,000 farmers are receiving direct instruction on their farms. . . .

It has been found by experience that the only way to reach some farmers and to get them to follow better methods of farming is through their boys. Where a farmer's boy has been enlisted in a corn club and produced on his father's farm an acre of corn yielding from 50 to 200 bushels at a cost of not more than 30 cents a bushel, the farmer is no longer sceptical about improved farm methods.

In 1909 there were 10,543 boys enrolled in these clubs. In 1910 the number has increased to 46,225. This feature of the work has aroused unbounded interest and enthusiasm and turned attention toward the farm. Public-spirited citizens in the various Southern States have contributed \$40,000 for prizes for these boys. Prize-winners in four States were given trips to Washington and awarded diplomas of merit. This year such trips are offered from every Southern State through bankers' associations, boards of trade, educational associations, private citizens, and state fairs. Governors and superintendents of public instruction will give diplomas similar to those earned last year to all boys who make excellent records.

When a boy makes a thorough study of corn it is easier to succeed with other crops. Some of the boys in the boll-weevil parishes of Louisiana have not only broken the records in corn production there, but have achieved the same extraordinary results with cotton, potatoes, onions, and other crops.

Marked changes in general farm methods and in the economic life of the people do not take place in a single year. The few demonstrations in each neighbourhood the first year attract attention and dispel doubt, the second year brings increasing success, and the third year usually marks the beginning of the general adoption of the changed methods, though time is required to make the adoption universal and thorough in a community.

Consecutive Secretaries of Agriculture have commented on the practical utility of their Departments with justifiable pride. For instance, the Secretary of Agriculture stated in his Report of 1906:

The work of the Department of Agriculture has already had results which are valued at hundreds of millions of dollars annually, and yet the Department feels that it has barely crossed the threshold of its mission of discovery and education. Co-operating to the same ends are sixty Experiment Stations in fifty-one States and territories, the sixty-three Agricultural Colleges, thousands of farmers institute meetings yearly, many excellent agricultural periodical publications, and new instructive books. Then there is a new line of work which is so productive of results that it is constantly extending, and that is the Demonstration Farm, the encouragement of individual farmers to change their agriculture so as to multiply their yield and their profits, and thus afford object-lessons to other farmers. Thus it appears that forces are now at work which will very considerably increase the production of the farms within a generation, and which promise to continue that increase indefinitely.

The sterling worth of the educational work done by the United States Department of Agriculture has been gratefully recognised by America's ablest statesmen. For instance, President Roosevelt stated at Sioux Falls:

The Department of Agriculture devotes its whole energy to working for the welfare of farmers and stock-growers. In every section of our country it aids them in their constantly increasing search for a better agricultural education. It helps not only them, but all the nation, in seeing that our exports of meats have clean bills of health, and that there is rigid inspection of all meats that enter into inter-State commerce. Thirty-eight million carcasses were inspected during the last fiscal year. Our stock-growers sell forty-five million dollars' worth of live-stock annually, and these animals must be kept healthy or else our people will lose their trade. Our exports of plant products to foreign countries amount to over six hundred million dollars a year, and there is no branch of its work to which the Department of Agriculture devotes more care. Thus the Department has been successfully introducing a macaroni wheat from

the headwaters of the Volga, which grows successfully in ten inches of rainfall, and by this means wheat-growing has been successfully extended westward into the semi-arid region. Two million bushels of this wheat were grown last year; and being suited to dry conditions, it can be used for forage as well as for food for man.

The Department of Agriculture has been helping our fruit men to establish markets abroad by studying methods of fruit preservation through refrigeration and through methods of handling and packing. On the Gulf coasts of Louisiana and Texas, thanks to the Department of Agriculture, a rice suitable to the region was imported from the Orient, and the rice crop is now practically equal to our needs in this country, whereas a few years ago it supplied but one-fourth of them. The most important of our farm products is the grass crop; and to show what has been done with grasses, I need only allude to the striking change made in the entire West by the extended use of alfalfa.

Moreover, the Department has taken the lead in the effort to prevent the deforestation of the country. Where there are forests we seek to preserve them; and on the once treeless plains and the prairies we are doing our best to foster the habit of tree-planting among our people. In my own lifetime I have seen wonderful changes brought about by this tree-planting here in your own State and in the States immediately around it.

On December 3, 1901, President Roosevelt stated in his "Messages to Congress":

The Department of Agriculture during the past fifteen years has steadily broadened its work on economic lines, and has accomplished results of real value in upbuilding domestic and foreign trade. It has gone into new fields until it is now in touch with all sections of our country and with two of the island groups that have lately come under our jurisdiction, whose people must look to agriculture as a livelihood. It is searching the world for grains, grasses, fruits and vegetables specially fitted for introduction into localities in the several States and territories where they may add materially to our resources.

By scientific attention to soil survey and possible new crops, to breeding of new varieties of plants, to experimental shipments, to animal industry and applied chemistry, very practical aid has been given our farming and stock-growing interests. The products of the farm have taken an unprecedented place in our export trade during the year that has just closed.

The United States Industrial Commission of 1902 reported:

Agriculture has derived more benefit from the establishment of the Department of Agriculture and from its administrative work than from any of our Federal legislation. The annual injury to fruit and grain from the ravages of insects would probably be double what it is now but for the work of the Department. The distribution of weather forecasts has been of incalculable value in aiding farmers to give timely care to crops. Its experiments in proving the adaptation of crops to climates and soils have developed agriculture into a science, and thus alike benefited the industry and the country in general.

It would be easy to fill a large volume with similar pronouncements made by the most eminent American statesmen and the leading agriculturists.

The United States Department of Agriculture has for many years, through its Bureau of Chemistry, made exhaustive investigations relating to the adulteration of food and to the effect of the various preservatives used upon the human system. These investigations are carried on not only by chemical analyses made in the laboratory but also by practical experiments made upon men. The Department of Agriculture has in its employment a number of selected young men, mostly chemical enthusiasts, called "The Poison Squad," who submit themselves cheerfully to lengthy and dangerous tests, including

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the taking of adulterated foods and preservatives, for the benefit of science and of the human race.

Other departments of the Federal Government and of the Governments of the individual States resemble the United States Department of Agriculture by their energetic and useful activities. The industrial and commercial interests of the United States have been vastly benefited by the scientific branches of the Department of Commerce and Labour, by the excellent Patent Office, which Great Britain might copy with advantage, and by the ably directed Bureau of Standards. The efficiency of the American railways has been vastly increased by the Inter-State Commerce Commission, which has abolished the unfair discriminations which formerly prevailed in favour of large shippers and of certain localities. That Commission has brought about uniformity in railway equipment, uniformity and lucidity of railway accounting, the introduction of an excellent automatic signalling system, of automatic couplers on the railways, etc., and its utility has been gratefully acknowledged even by the railways themselves. The funds voted for the Inter-State Commerce Commission have increased from \$242,914 in 1900 to \$5,016,136 in 1916. The investigations and publications of the Geological Survey are invaluable to all who are interested in mining. All these scientific services are lavishly endowed with funds. Altogether the Federal Government spends on the principally scientific services about £10,000,000 per year.

The United States Government and the Governments of the single States try to educate the grown-up in the best and most scientific methods of business, not only by tuition, but also by example. Most of the great Government Departments are run like large, well-organised businesses. They are models of administrative efficiency

The American Government offices are staffed, not with dull bureaucratic automatons, not with human derelicts and petrefacts, but with keen, open-minded and striving business men. While the productive Government undertakings of Europe are, as a rule, models of waste and of bureaucratic incompetence, many of the American Government undertakings are executed with extraordinary ability, rapidity and efficiency at surprisingly low cost. The Panama Canal, many of the great irrigation works in all parts of the Union, the regulation of river courses, etc., have been executed by the Federal Governments, through the Army Engineers with such ability and at so low a cost as to be a model to private engineers and contractors. The Government Printing Works at Washington are probably the largest and the most efficient printers in the world, etc.

The wealth of nations depends obviously less on the possession of great natural resources than on the ability and activity of the men who exploit them. While a good general and classical education, given on traditional lines, produces men of culture who may be delightful talkers and companions, but who may possess no particular qualification for assisting or directing the production of wealth, a good practical and scientific education, given to the largest possible number of people, is a most powerful instrument for achieving national economic success. In a world in which scientific production, scientific transport and scientific commerce have become general, success falls naturally to trained scientific ability. The rapid and vast industrial progress of the United States and of Germany is largely due to the general appreciation and the energetic promotion of education, while England's industrial backwardness is largely due to indifference to education on the part of both masters and men. After all, rough unskilled workers can only

do rough and unskilled work. We read in the Report on Technical Education published by the United States Commissioner of Labour in 1902:

To determine the progress of trade education in Europe during the last two or three decades one turns to Germany rather than to any other country, because of the great impetus that trade education has there received, and because its development has corresponded with a most remarkable advance of pure scientific knowledge on the one hand and of industry on the other. It is inevitable that some causal connection should be seen between these two conditions. . . .

All English teachers deplore the lack of enthusiasm for education among all classes. . . . A serious obstacle to the progress of technical education is the indifference of employers. . . . Another very serious obstacle—in fact, the most serious of all—is the poor general education of the English workman. Nearly all of the artisan class leave school at twelve or thirteen, and after earning small amounts in doing odd jobs about the streets or in factories, settle down at fifteen or sixteen as general labourers or factory operatives, or enter upon the learning of a trade. When they go to the evening technical classes at fifteen or sixteen, they have forgotten much of what they knew upon leaving the elementary school.

In winter, 1903, the late Mr. Alfred Mosely, a retired merchant, sent to the United States at his own expense a Commission of experts, who were asked to study and to compare the British and American educational systems and to express their opinion in writing. Mr. Mosely himself reported:

One of the things that struck me, all through the United States, was the large amount of money devoted to educational purposes, the buildings being magnificent and the equipment lavish. The teachers seemed fired with enthusiasm, and there is a thirst for knowledge shown by pupils of all ages which is largely lacking in our own country. In contrast to our education, which

has to a large extent been "classical," I found that in America it is the "practical" subjects which are principally taught, and technical classes and schools are to be found everywhere. There are also excellent opportunities for those going into the professions to take up classical subjects; but with the ordinary "everyday" boy who has to fight his way in the world the bulk of the time is devoted to practical subjects likely to be of most use to him in after-life. American boys remain at school much longer than is the case here, often, in addition, passing through to the secondary schools and colleges at little or no expense to their parents or themselves. . . .

My observations lead me to believe that the average American boy when he leaves school is infinitely better fitted for his vocation and struggle in life than the English boy, and in consequence there are in the United States a smaller proportion of "failures," and fewer who slide downhill and eventually join the pauper, criminal, or "submerged tenth" class. The aim of education in America is to make every boy fit for some definite calling in life, and my own experience leads me to think that nearly every lad, if properly trained, *is* fit for something. . . .

Another point that struck me was the intense belief of the Americans in the education of the masses. They feel that their country cannot progress and prosper without it. . . . Further, from a purely business point of view, Americans see in the money spent on education a magnificent investment for their country. . . .

Again, whilst British rich men spend large sums upon sport of various kinds, it appears to be the hobby of moneyed Americans to devote enormous amounts of money to the endowment and equipment of various educational institutions. They pass their lives in strenuous work, and their labours in building up industries and developing territory are of infinite value to their people, recalling what was the ideal of the late Cecil Rhodes—viz., that the truest philanthropy consists in creating industries and fields of industry to occupy the masses and afford them remunerative employment. . . .

Personally I credit the American nation with an intense ambition not only to raise themselves individually, but also to use their efforts for the raising of their fellows and

for the furtherance of civilisation. . . . I have heard it urged that in America there is no aristocracy but that of money. I beg to differ. The contention may on the surface appear to be true, but if the matter be probed a little deeper it will be found that in reality the aristocracy of money is an aristocracy of brains.

Mr. E. W. Black, Mayor of Nottingham and Chairman of the Nottingham Education Committee, reported:

The great facts remaining with me as the result of my educational investigations in America are—

(1) That public opinion is much more strongly in favour of education than in this country;

(2) That the scholars in America take a keener interest in their studies than is generally apparent here; and

(3) That the teaching given in the elementary schools produces a mental alertness and readiness of mind to a greater extent than is secured in this country.

The people of America believe in education, and they are willing to pay for it. They regard it as an investment of their money on which they get a good return. The people of England are only half-persuaded of the value of education, and there are still many who regard even the present expenditure as extravagant. . . .

In England the great majority of the children leave school at the earliest possible moment; they go out to work to help to increase the family income. In America the children stay longer at school, and one of the leading educational experts in America said to me, "We find that there is a direct ratio between the number of years spent in school and the productive capacity of the scholars in dollars and cents."

Professor Papillon stated:

To sum up: what has struck me most forcibly in a short and imperfect survey of a wide field is first of all the attitude of the American people towards public education as a prime necessity of national life, for which hardly any expenditure can be too great; and next its eminently practical popular character. . . .

The educational systems of America have the merits and defects of much else in that great, but as yet unfinished, country. They are full of life and energy; freely, not to say rashly, experimental; innovating, renewing, abandoning, sacrificing, now one point, now another, whether of ideas or practice, in the effort at growth and development. They are less systematically and scientifically thought out beforehand than the more symmetrical systems of Continental Europe; but they are, perhaps, for that very reason, more suggestive to ourselves, to a free people feeling its way along the same road.

Councillor John Whitburn, of the Newcastle-on-Tyne Education Committee, reported:

I spent some days with 125 officers of the Cash Register Works, and found that everyone had received a good education of some sort. I was assured by the chief of the Inventions Department of that concern that "the best and most of their inventions and improvements of machinery were brought about by those who were best educated and who were able to embody their ideas in a creditable drawing." This is the sort of testimony one meets with on every hand. In the United States, more than in any other country, one finds that the business man is also an educator, and that the educator is a business man also. . . .

The American business man is more often an educationalist than an active politician. Nearly every large industrial concern has some sort of educational centre, or department, into which is directed an enormous amount of money and personal energy. The money spent on public education by no means represents the whole effort of the nation to raise itself to a higher intellectual level. . . .

As the result of his superior education, the American workman requires less supervision and direction than is customary in this country. . . . So eager are the American workmen to acquire a technical knowledge of their trades that the authorities of the Pratt Institute informed us that they were reluctantly compelled to refuse one-half of those who applied for admission to

their classes for engineering drawing. This great institution employs no fewer than 115 teachers.

American industrial progress is due more than anything else to the determination shown by the American working classes to equip themselves in the most thorough-going fashion. Hundreds of employers testify to the fact that there has been an improvement in the quality of the work and an increase in the quantity of the output as the result of technical education. . . . Mr. Johnson, Director of the Baldwin Locomotive Works, informed me that the trade and manual training schools are indispensable, whilst the technical schools have made the country great. . . .

On every hand I saw the evidence of a scientific and technical training in industrial operations. At the National Cash Register Works I saw machines in operation which take 103 separate cutting and boring tools, and I was assured that these machines were all evolved by their own employees. . . . There is urgent need for all those who are in any way concerned about the future of the British industries to give the most earnest consideration to the question of the practical education of our artisan class. . . .

I spent the last three weeks of my time in the United States in visiting a large number of industrial concerns and in studying the conditions under which the working people of the country live and labour. I formed a very high opinion of the American workers of both sexes. The men are alert, highly intelligent, sober and self-respecting in the highest degree. The American workman is invariably courteous and accommodating—in a word, a gentleman. With respect to the women who work for a living, I have been delighted to observe the evidence of a superior culture of the intellect and character. . . . The far-seeing American employer recognises that there is a substantial economic value behind every reform which contributes to the intellectual vigour and the personal comfort and happiness of every employee.

The English educational system is grossly inefficient. It does not adequately prepare the people for the struggle

of life. It creates inefficient leaders and an equally inefficient rank and file. Professor Huxley wrote many years ago: "We study in these days not to know, but to pass, the consequence being that we pass and don't know." That is, unfortunately, still true. British education is largely a sham which creates sham experts and sham leaders.

The United States owe their vast wealth not merely to the great extent of their territory and of the natural resources contained in it, but also, and particularly, to the energy and ability with which the resources of nature have been exploited by the people. The energy and ability of the American people are very largely due to the practical and thorough education and training which they have received. Their abilities are rather acquired than inborn. America's economic success is largely due to the fact that, in the words of the late Mr. Choate, "education is the chief industry of the nation." The territory and the resources of the British Empire are vastly greater than those of the United States. The British Empire may therefore far exceed the United States in white inhabitants, in agriculture, in the manufacturing industries, in wealth and in power, if the British people are willing to learn from America's example.

CHAPTER VII^r

LABOUR AND CAPITAL AFTER THE WAR *

IT is generally agreed that the present War will open a new chapter in the history of the world. At its conclusion the present generation will be faced with a number of most important problems, the solution of which will affect future generations for centuries to come. It will give rise to a new set of conditions in the relations between the nations of the world. It may permanently affect the relations between rulers and ruled. It is bound to revolutionise completely economic conditions, and particularly the relations between labour and capital. At the end of the War all the combatant nations will be left with a staggering burden of war debts. Demobilisation will have to take place gradually, and will be very costly. Great Britain will have a National Debt amounting at least to £10,000,000,000. It remains to be seen whether the vast sums lent to Britain's Allies can be repaid, and whether substantial indemnities can be obtained from Germany and her Allies. As Belgium, France, Serbia, Rumania, Poland and Russia, whose territories have been devastated, have naturally the first claim upon such indemnities, little may be left to satisfy the claims of Great Britain.

The British Empire is in the happy position that it possesses in the Dominions and Colonies unlimited latent wealth. A century ago the Overseas possessions of this

From *The British Dominions Year-Book, 1918.*

country were worth a few paltry millions. Since then their wealth has rapidly increased. In a few years it will approach that of the Motherland, and in a few decades it should vastly exceed it. It stands to reason that the Dominions and Colonies can bear, as they would wish, part of the War Debt. Besides, the undeveloped resources of the Empire might in part be reserved for the repayment of the War Debt. Before the War British yearly budgets showing a national expenditure of £200,000,000 seemed monstrous. After the War a national expenditure of £600,000,000 per year may seem exceedingly moderate.

British workers have become accustomed to a vastly improved standard of living, to better food, better furniture, better clothes, more amusements, etc. They will not care to go back to the low wages and the conditions which prevailed before the War. Moreover, the men in the trenches have rubbed shoulders with men from Canada, Australia, New Zealand, South Africa and the United States, and have been made acquainted by them with labour conditions across the sea. As Canadian, Australian, New Zealand and South African wages are also approximately three times as high as are British wages, British wage-earners would migrate to the Dominions and to the United States in millions should they not obtain after the War largely increased wages comparable with those paid in the new countries. We must accustom ourselves to the idea that British wages will have to be Americanised.

Vast burdens will be thrown upon the nation, the taxpayers, and particularly upon the employers, the capitalists. Happily, there is reason for believing that the economic difficulties caused by the War will not overwhelm this country—that they may prove a blessing in disguise. Men are born idlers. They work, as a rule,

only when compelled. Civilisation is at its lowest in the happiest climes where men can live without work, and it is most highly developed where a rigorous climate or hard social conditions force men to produce intensively. The most powerful promoter of civilisation is the tax collector. The enormous increase in taxation caused by the ruinously expensive war against Imperial and Republican France a century ago brought about a tremendous expansion of British industry. It made this country the workshop of the world. The Civil War of 1861-1865 was responsible for vastly increased taxation which, in turn, raised the American industries to the highest point of efficiency. The present War Debt and very high taxation required by it should prove an invaluable stimulus to British capital and labour. The War is likely to treble permanently the national expenditure and taxation. It is bound to lead to a vast increase in wages. I intend to show that the increased taxes and wages can easily be found by Americanising British production, and that the War, far from impoverishing this country, may ultimately vastly enrich both Motherland and Empire.

Before the War American wages were approximately three times as high as were British wages. In 1915 the United States Department of Labour published a volume of some three hundred pages entitled *Union Scale of Wages and Hours of Labour, May 1st, 1914*. Wage figures are given in it for a number of the more important American towns. Perhaps the most interesting American town with regard to wages is Chicago, because it is the most international. Being situated between East and West, the wages paid in Chicago are above those paid in some of the Eastern towns, such as Boston and Philadelphia, and below some of the Western towns such as San Francisco and Los Angeles. On May 1, 1914, the

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following weekly wages were paid in Chicago in some representative occupations:

		<i>Dols.</i>	<i>£ s. d.</i>
Bakers' foremen, day work	20	4 0 0	
,, night work	22	4 8 0	
,, second-hands, day work	18	3 12 0	
,, ,, night work	20	4 0 0	
Bakers' Bohemian bread, oven-men, day	20	4 0 0	
,, ,, night	22	4 8 0	
,, ,, second-hands, day	18	3 12 0	
,, ,, ,, night	20	4 0 0	
Bakers' Hebrew bread foremen	26	5 4 0	
,, ,, second-hands	23	4 12 0	
Bakers' Scandinavian bread, foremen, day	20	4 0 0	
,, ,, night	22	4 8 0	
Bakers' Scandinavian bread, second-hands, day	18	3 12 0	
Bakers' Scandinavian bread, second-hands, night	20	4 0 0	
Bricklayers	33	6 12 0	
,, sewer and caisson work	55	11 0 0	
Carpenters	28.60	5 14 5	
Cement workers	28.60	5 14 5	
Builders' labourers	17.60	3 10 5	
Tile-layers	33	6 12 0	
Coal-carters, one horse	15	3 0 0	
,, two horses	18	3 12 0	
,, three horses	21	4 4 0	
Boiler-makers, manufacturing shops	21.60	4 6 5	
,, outside	27.50	5 10 0	
Moulders	24	4 16 0	
Compositors, English	24	4 16 0	
,, Bohemian	24	4 16 0	
,, German	24	4 16 0	
,, Norwegian	24	4 16 0	
,, Polish	21	4 4 0	
,, Swedish	24	4 16 0	

The wages given were minimum wages. The hours of labour were rather short. In the baking trade in Chicago they ranged from 48 to 54 hours per week. In the building trade they were 44 hours per week. The

carters worked 66 hours, the metal workers from 44 to 54 hours, the compositors 48 hours, etc. Many employers pay more than the union rate of wages. Overtime on weekdays is, as a rule the standard rate and a half, and overtime on Sundays and holidays is paid usually at twice the normal wage. A Chicago bricklayer earns 3s. an hour on weekdays and 6s. an hour on Sundays.

It will be noticed that the average wage of skilled workers is about £5 per week, while the average wage of unskilled labourers comes to from £3 to £4 per week, and that the wage paid to German, Czech, Norwegian, Polish, Scandinavian and Hebrew workers is approximately as high as that paid to native Americans and to Englishmen. Officials and salary earners receive similarly high pay. Policemen receive on joining \$1,000, or £200 per year, and after five years' service as first-grade patrol men they obtain \$1,400, or £280, which is equal to £5 8s. per week. The wages of firemen, postmen, servants, clerks, office-boys, shop-girls, agricultural labourers, etc., are similarly high.

British workers have frequently agitated for considerably increased wages, but their demands have hitherto been opposed by their employers, who usually have pleaded that a considerable increase in wages was impossible; that they were working with a narrow margin of profit; that a considerable addition to the wages bill would so greatly increase the cost of production that they would have to shut down, because they could not sell their productions at an enhanced price in the world's markets, and not even in the home market. There was no doubt a good amount of truth in the arguments used.

Although American wages, both for skilled and unskilled labour, were before the War approximately three times as high as corresponding British wages, American commodities were sold freely in neutral countries, and

even in competition with British productions made by cheap labour. In many lines American goods were even far cheaper than similar British wares. By far the cheapest motor cars obtainable in this country are Fords and other American machines which are produced by very highly paid labour. This fact suffices to show that lowness of wages does not necessarily mean cheapness of production. If the one led to the other it would logically follow that industrial supremacy should not be in the hands of the United States, but in those of China and India.

The fact that the American industries can successfully compete with the British low-wage industries is not due to dumping. All who have gone to the United States or who have closely studied American economic affairs know that America produces as cheaply as does this country, treble wages notwithstanding. American agricultural and industrial productions are sold at about the same price wholesale as are the equivalent British productions. Sometimes they are a little dearer and sometimes they are cheaper. People who complain about the high cost of living in America usually think of the dearness of everything where personal services are involved. The fact that wholesale prices in England and America are about equally high notwithstanding the vast differences in wages can best be seen by comparing the prices of certain standard commodities such as steel, or steel rails, or plain cotton goods, or wheat, or meat, in England and the United States during a number of years.

Notwithstanding treble wages, the American industries as a whole produce as cheaply as the British industries, and sometimes more cheaply, because the American workers produce approximately three times as much as do their British colleagues. They succeed in this because the American industries are on the whole better organised

and more scientifically managed, and especially because the American workers have not only better machines, as is fairly generally known, but also because the engine-power per thousand workers is approximately three times as great as is British engine-power.¹ These assertions seem incredible, but are true. If we wish to compare British and American output per worker per year we must turn to the American and British Censuses of Production. The British Census of Production was taken in 1907 and an American Census in 1909. The two years lie so near together that one may fairly compare results.

There is, of course, a difficulty in comparing the efficiency of British and American labour. In the first place, the industries in the two countries have not always been officially classified in the same manner. Therefore many industries, such as the iron industry, cannot be compared by means of the Census figures. In the second place the qualities of American and British produce frequently differ widely. These considerations have necessarily narrowed the range of comparable figures.

The following table contains statistics relating to some British and American industries which may fairly be compared. They will show conclusively that in many of the comparable industries the American workers produce approximately three times as large a quantity of goods as do their English colleagues, and that they succeed in producing three times as much not because they work three times as hard, but because, as is also shown in the table, the United States use in the identical industries approximately three times as much horse-power per thousand men as does Great Britain. The following figures were published by me in the *Fortnightly Review* for August, 1913, and in the *Nineteenth Century* of December, 1915. They have been widely discussed and criticised in the leading technical journals, such as

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Engineering and *The Engineer*, and by many eminent industrialists, but they have hitherto not been successfully challenged:

	<i>Production per Year.</i>	<i>Number of Wage- Earners.</i>	<i>Horse- Power Employed.</i>	<i>Horse- Power per 1,000 Wage- Earners.</i>	<i>Value of Pro- duction per Wage- Earner per Year.</i>
Boots and Shoes:					
United Kingdom ..	20,095,000	117,565	20,171	172	171
United States ..	102,359,000	198,297	96,301	486	516
Cardboard Boxes:					
United Kingdom ..	2,067,000	19,844	2,288	114	106
United States ..	10,970,000	39,514	23,323	590	275
Butter and Cheese:					
United Kingdom ..	10,164,000	7,754	11,372	1,477	1,310
United States ..	54,911,000	18,431	101,379	5,507	2,979
Cement:					
United Kingdom ..	3,621,000	18,860	60,079	3,195	192
United States ..	12,641,000	26,775	371,799	13,873	472
Clothing:					
United Kingdom ..	62,169,000	392,094	17,837	45	158
United States ..	190,566,000	393,439	65,019	165	484
Cocoa, Chocolate and Confectionery:					
United Kingdom ..	16,171,000	54,629	19,898	346	296
United States ..	31,437,000	47,464	46,463	980	662
Cotton Goods:					
United Kingdom ..	132,000,000	559,573	1,239,212	2,214	236
United States ..	125,678,400	378,880	1,296,517	3,433	332
Clocks and Watches:					
United Kingdom ..	613,000	4,448	550	125	137
United States ..	7,039,400	23,857	14,957	628	296
Cutlery and Tools:					
United Kingdom ..	2,047,000	12,485	5,248	420	164
United States ..	10,653,200	32,996	62,294	2,069	323
Dyeing and Finishing					
Textiles:					
United Kingdom ..	18,000,000	97,588	190,252	1,949	184
United States ..	16,711,200	44,046	107,746	2,449	379
Gasworks:					
United Kingdom ..	20,844,000	49,413	33,618	687	422
United States ..	33,362,800	37,215	128,350	3,469	897
Firearms and Ammunition:					
United Kingdom ..	677,000	4,444	2,619	595	152
United States ..	6,822,400	14,715	17,840	1,214	464

	<i>Production per Year.</i>	<i>Number of Wage- Earners.</i>	<i>Horse- Power Employed.</i>	<i>Horse- Power per 1,000 Wage- Earners</i>	<i>Value of Pro- duction per Wage- Earner per Year.</i>
Gloves:	£				£
United Kingdom ..	1,056,000	4,532	509	113	233
United States ..	4,726,200	11,354	2,889	256	416
Hats and Caps:					
United Kingdom ..	5,256,000	28,420	5,142	181	149
United States ..	16,598,000	40,079	23,524	588	414
Hosiery:					
United Kingdom ..	8,792,000	47,687	7,784	163	184
United States: ..	40,028,600	29,275	103,709	804	309
Leather Tanning and Dressing:					
United Kingdom ..	18,289,000	26,668	22,609	847	686
United States ..	65,574,800	62,202	148,140	2,389	1,054
Lime:					
United Kingdom ..	2,184,000	15,532	10,867	701	141
United States ..	3,590,400	13,897	27,671	1,991	258
Brewing and Malting:					
United Kingdom ..	67,254,000	68,996	64,636	937	975
United States ..	82,616,400	56,339	347,726	6,209	1,466
Matches:					
United Kingdom ..	862,000	3,865	1,591	408	223
United States ..	2,270,600	3,631	6,224	1,729	625
Paint, Colours and Varnish:					
United Kingdom ..	9,127,000	10,574	14,575	1,375	863
United States ..	24,977,800	14,240	56,162	4,012	1,754
Paper:					
United Kingdom ..	13,621,000	40,955	172,224	4,201	330
United States ..	53,531,000	75,978	1,304,265	15,846	705
Pens and Pencils:					
United Kingdom ..	791,000	6,025	1,450	241	131
United States ..	2,539,000	6,058	4,261	710	419
Printing and Publishing:					
United Kingdom ..	13,548,000	34,210	38,611	1,133	396
United States ..	147,757,200	258,434	297,763	1,154	572
Railway Carriages and Waggons:					
United Kingdom ..	9,850,000	27,105	30,407	1,126	364
United States ..	24,746,000	43,086	97,797	2,274	574
Silk:					
United Kingdom ..	5,345,000	30,710	18,867	608	142
United States ..	39,382,400	99,037	97,947	989	398
Soap and Candles:					
United Kingdom ..	12,707,000	15,596	16,938	1,092	821
United States ..	22,897,600	13,538	29,159	2,160	1,691

A glance at the figures given shows that in boots and shoes, cardboard boxes, clothing, cotton goods, clocks and watches, cutlery and tools, etc., American production per worker is approximately three times as great as is British production per worker, and that the startling difference is accompanied by an almost identical difference in the horse-power used per thousand wage-earners. As boots and shoes, clothing, etc., are sold at approximately the identical wholesale prices in England and in the United States, and as the prices given in the British and American Census are wholesale prices, it cannot be doubted that production per man both in value and in quantity is about three times as great in America as it is in this country. It also follows that British production per man can be trebled by using American processes.

We can best compare industrial production per head in England and America by taking not merely the gross output, but also the net output per worker in the two countries. Such a comparison can easily be made with the help of the British and American Censuses of Production. Both Censuses furnish the value of the raw materials used in manufacturing and state the overhead expenses of each industry. By deducting the value of the raw materials used, rent, rates, taxes, salaries, etc., we arrive at the actual value produced by the workers themselves, and we can thus ascertain how much every British and American worker produces net by the work of his hands either per year or per week. The calculation indicated furnishes the following remarkable result given on p. 190.

While the lengthy table previously given shows the high importance of large individual production to the industries and to the nation as a whole, the following table shows the importance of large individual production

NET PRODUCE PER WORKER PER WEEK.

	<i>In the United Kingdom.</i>	<i>In the United States.</i>
	<i>£ s. d.</i>	<i>£ s. d.</i>
Boots and shoes	1 7 4	3 10 0
Cardboard boxes	1 0 0	2 15 0
Butter and cheese	2 8 1	8 3 0
Cement	2 10 10	4 17 8
Clothing	1 3 11	4 7 4
Cocoa, chocolate and confectionery	1 12 3	4 18 5
Cotton goods	1 10 5	2 13 9
Clocks and watches	1 7 9	4 3 0
Cutlery and tools	1 8 1	4 1 6
Dyeing and finishing textiles	1 18 11	4 4 3
Gasworks	4 1 1	11 16 7
Firearms and ammunition	2 2 8	4 9 2
Gloves	1 11 2	3 10 9
Hats and caps	1 5 10	4 1 10
Hosiery	1 3 5	2 2 8
Leather tanning and dressing	2 5 0	4 13 1
Lime	1 13 5	3 2 4
Brewing and malting	6 7 3	19 10 5
Matches	1 13 0	7 3 1
Paint and varnish	3 16 2	12 9 3
Paper	2 2 8	5 3 5
Pens and pencils	1 9 8	4 5 9
Printing and publishing	3 13 1	7 16 11
Railway carriages, etc.	2 7 4	4 0 5
Silk	1 1 2	3 9 3
Soap and candles	2 19 8	11 7 8

to the workers themselves. It will be noticed that the net production per worker per week is about three times as great in the United States as in the United Kingdom, and in some instances it is much greater. Of the value actually produced by the worker, the larger part is paid to him in the form of wages, while a portion is retained in the form of profits by the manufacturer. Now, it stands to reason that a worker cannot possibly earn more than the whole value of his work. If he received the entire value of his output, the manufacturer would receive nothing for his trouble and risk and give up the business. If the worker received in wages more than the value

added to the raw material by his work, the factory would soon be bankrupt. In 1907 English cardboard-box makers produced net £1 per week. Hence they could not possibly receive a larger wage than £1 per week, whether the factory was managed on ordinary capitalist lines or whether it was managed co-operatively or socialistically. It follows that the English cardboard-box makers could increase their wages only by increasing their output. Similarly the boot and shoe operatives, who actually added only £1 7s. 4d. per week to the value of the leather and other raw materials used, could not possibly earn more than the slender amount which they produced per week. Of course, the cardboard-box makers, boot-makers, etc., might have struck for double wages, and might possibly have obtained them. However, as presumably all other workers would have secured a similar advance in wages, none would have been better off in the end. After all, the nation is a great co-operative society. The citizens exchange their productions. Prosperity consists not in high wages, but in adequacy of houses, furniture, food, clothes, etc. Wages in themselves mean very little. They are important only for what they will buy. If the building trade, the furniture trade, the clothing trades and agriculture produce much per head, there will be an abundance of house room, furniture, clothes and food, whether wages are high or low. If, on the other hand, production per worker is low, there will be a scarcity of house room, furniture, clothing and food, and the workers will be ill-clad and dissatisfied even if they should earn each £10 per day in wages. It follows that the British workers have pursued a phantom in endeavouring to benefit themselves by increasing wages and limiting output. They have hunted after the shadow and neglected the substance.

The inefficiency of the British industries compared with the American industries is by no means exclusively due

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to the workers who have endeavoured to limit output, but also to the manufacturers and to the Government. British employers have been too conservative.' They have neglected new processes and inventions. They have relied for success rather on cheap labour than on the utmost efficiency in organisation and in mechanical outfit. These tendencies among masters and men have been encouraged by the attitude of the politicians who have constantly told us that England was the richest and the most efficient country in the world, who have failed to take an interest in economic matters because they were unduly interested in obtaining votes, and have encouraged labour in the suicidal policy of limiting output instead of enlightening the working masses. Happily, a better spirit is abroad. The War has opened the eyes of employers and employed to the inefficiency of the British industries, to the need of progress, and to the necessity of vastly increased production per head.

Inefficient and insufficient production is noticeable not only in the British manufacturing industries, but in British coal-mining as well. This will be seen from the following figures, which are taken from the *Coal Tables*, a British official publication:

TONS OF COAL PRODUCED PER ANNUM PER PERSON EMPLOYED.

Years.	United Kingdom.	United States.	Australia.	New Zealand.	Canada.
1886-1890 ..	312	400	333	359	341
1891-1895 ..	271	444	358	388	375
1896-1900 ..	298	494	426	441	457
1901-1905 ..	281	543	437	474	495
1906-1910 ..	275	596	462	470	439
1908	271	538	500	478	422
1909	266	617	388	456	400
1910	257	618	449	478	453
1911	260	613	485	487	395
1912	244*	660	542	503	472

* Strike Year.

This table gives a very disquieting picture. In 1886-1890 coal production per man was almost equal in the United Kingdom, the United States and the great Dominions. Since that time enormous improvements in the art of coal-getting have taken place, and in consequence of the mechanical and scientific progress made output per man in the United States and the Dominions has vastly increased. During that period of continued progress British coal production per man has steadily and enormously declined, so that production per man was in 1912 more than twice as large in the United States and in the great Dominions as it was in this country. Of course, in many cases the United States and the Dominions have thicker coal-beds lying at a lower depth than are to be found in the United Kingdom. Still, in view of the improvements in coal-getting, production per head should have increased in the United Kingdom as well. Its decrease is undoubtedly due to the policy of the coal-miners of increasing wages while restricting production. Coal is the bread of industry. It is the first raw material in all processes of manufacture. Its cheapness is of the greatest importance to all employers and their workers. Owing to the policy of restricting output and increasing wages, coal prices in Great Britain and elsewhere have changed as given in table on p. 194 during the period under review.

The policy of the British workers to make their productions scarce and dear has been terribly effective in the case of coal. During the period under review, while American, Australian and New Zealand coal has been cheapened notwithstanding a great increase in wages, English coal doubled in price. At the beginning of the period England had the cheapest coal. That advantage has been completely destroyed. It is noteworthy that American coal is far cheaper than British coal, although

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American wages are far higher in the coal industries than are British wages. Obviously, highly paid workers can produce more cheaply than less well paid workers if they produce efficiently.

AVERAGE VALUE OF COAL PER TON AT THE PIT'S MOUTH.

<i>Year.</i>	<i>United Kingdom.</i>	<i>United States.</i>	<i>Australia.</i>	<i>New Zealand.</i>
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
1886	4 10	6 4½	—	—
1887	4 9½	6 6½	9 2	10 10
1888	5 0¾	6 0	9 0	10 11
1889	6 4½	5 3½	8 11	11 3
1890	8 3	5 2½	8 6	11 0
1891	8 0	5 3½	8 9	11 4
1892	7 3½	5 4½	7 11	11 3
1893	6 9½	5 4	7 5	11 1
1894	6 8	5 1	6 8	11 0
1895	6 0½	4 9½	6 4	11 1
1896	5 10½	4 9½	6 2	10 10
1897	5 11	4 7½	5 11	10 0
1898	6 4½	4 5	5 9	10 0
1899	7 7	4 8½	6 1	10 0
1900	10 9½	5 3½	6 0	10 9
1901	9 4½	5 6½	7 7	11 0
1902	8 2½	5 8½	7 9	10 11
1903	7 8	6 7	7 4	10 9
1904	7 2½	5 10½	6 10	10 9
1905	6 11½	5 8	6 2	10 7
1906	7 3½	5 9½	6 3	10 7
1907	9 0	5 11½	6 10	10 7
1908	8 11	5 11½	7 4½	10 4½
1909	8 0¾	5 7½	7 6½	10 10½
1910	8 2½	5 10½	7 6½	11 1½
1911	8 1½	5 10½	7 5½	10 10½
1912	9 0¾	6 1	7 6½	10 10½

In transporting goods by railway and by inland waterway and in agriculture, the United States are as superior to the United Kingdom as they are in manufacturing and in coal-mining. If we compare British and American train loads and freights or British and American inland

water transport and agriculture, we find that, with treble wages, carriage by land and water is far cheaper in the United States than it is in this country; that, with treble wages, meat, bread-corn, vegetables, fruit, etc., are produced far more cheaply in the Great Republic than in these isles. It cannot be doubted that by Americanising these industries American wages can be paid to the workers and an American standard of living be secured for them. Moreover, it cannot be doubted that the trebling of production and of wages will lead to the trebling of profits.

If we compare the accumulation of capital in the United States and Great Britain, we find an infinitely more rapid progress in the former country. The trebling of wages, if accompanied by the trebling of production, is feasible and it is bound to lead to the trebling of profits. Out of these vastly increased profits and wages the increased taxes required by the War Debt can easily be found. That can be shown by an elementary piece of calculation. A man who before the War made a profit of £1,000 paid, let us say, £250 in taxation. The trebling of taxation would reduce his true income from £750 to £250—to one-third the pre-war figure. If, on the other hand, by trebling his output he should increase his net profit to £3,000, trebled taxation would reduce his true income to £2,250. Notwithstanding trebled taxation his true income would have trebled, and out of his trebled revenues he could easily provide for the enlargement of his works and their improved mechanical output.

I have shown that American output per man in field, factory, workshop, in railroading, etc., is about three times as great as is British output per man. Now, it must not be thought that America has reached the zenith of efficiency. In America, as elsewhere, progress knows no limit. In the United States, as over here, there are highly efficient works, moderately efficient ones, and very

inefficient ones. By merely approaching the American average of efficiency we can treble production, wages and the earnings of capital. By bringing production up to the higher level of American efficiency we can quadruple and quintuple output, wages and profits.

The bulk of the increased productions will find the readiest and the best market in the Homeland. As the nation is a great co-operative society, increased production and wages will bring about vastly increased consumption. The masses of the people will become better housed, better furnished, better clad, better fed, better educated, and will have more leisure, more cleanliness, more amusements, etc. The British workers, like their American colleagues, will dress like gentlemen, smoke cigars and take occasionally lengthy holidays. The British workers, like their American colleagues, will become house-owners and capitalists. The old drudgery and dirt and poverty and ignorance of the working classes will disappear.

The British workers have received during the War some foretaste of Americanised labour conditions. Their wages have increased very greatly, and so has output per worker. Before the War the United Kingdom had, according to the Census, about 18,000,000 workers. Of these, about 6,000,000 have joined the army and navy, while about 3,000,000 are engaged in producing munitions. The remaining 9,000,000 are employed upon ordinary peace-work. Now, these 9,000,000 on peace-work produce approximately as much as did the 18,000,000 before the War, for the consumption of the people is approximately identical with pre-war consumption. The upper and the middle classes have no doubt restricted the consumption of goods of every kind, partly owing to the appeals for economy, partly owing to increased taxation. On the other hand, the workers have greatly increased

their purchases. At no time in men's recollection have the working masses been better dressed and appeared better fed. At no time has there been such a keen demand for pianos, furs, jewellery, furniture, etc. At no time have the places of amusements been more crowded. That experience will not be lost upon the workers.

The best market for vastly increased production will be the Home market. The second best will be the Empire and the rest of the world market. The Imperial market is susceptible of indefinite expansion. In a few decades Canada may be as populated and as wealthy as the United States are at the present moment. By a wise economic policy, by the development of the Empire, the British workers can secure vast prosperity to themselves and to their country.

It need not be thought that the trebling of production would mean the trebling of exertion on the part of the worker. It is an old experience that the greatest output requires the least exertion, while the smallest output calls for the greatest amount of labour. A smith, with a heavy hammer worked by hand, produces little per hour at infinite exertion. Another smith, controlling a few levers, can, with a steam-hammer or a hydraulic hammer, produce a hundred times as much without any exertion. A man ploughing by hand with a one-share plough will, with a great expenditure of energy, do only a tithe of the work which can be done by a man sitting on a tractor which pulls a ten-share plough. The machine, far from being an enemy of labour, is labour's best friend. The machine, far from being the working-man's enemy, is his best friend, for the machine is to the worker what the horse is to the carter. It is far easier to direct a horse than to carry the weight which it pulls.

The efficiency of a carter is greatest when horse and man willingly co-operate. If horse and man disagree, if the

horse is ill-treated and retaliates on the carter and smashes up the cart, both suffer. It is sincerely to be hoped that capital and labour, employers and employed, will learn at last that they can benefit themselves most by mutual understanding, fairness, generosity, justice, co-operation. The policy of mutual exploitation and of mutual suspicion is an extremely short-sighted one. Strikes are quite unnecessary. It should not pass the wit of man to devise an organisation whereby industrial disputes might peacefully be settled on equitable principles. Fantastic schemes evolved by unpractical dreamers will not increase the prosperity of the workers, and will not enable Great Britain to pay off the debt created by the War. If we wish to achieve both these aims we had better rely on experience and common sense than upon poetical imagination. The Americans have solved the problem of economic organisation. In the United States capital and labour, employers and employed, are immensely prosperous.

The immediate necessity is not to create a theoretically perfect, an ideal, organisation of the nation, but to provide for the urgent needs of the hour. These can obviously be provided, not by reverting to the policy of restricting output or by pitting capital against labour and labour against capital, but by a harmonious co-operation of the two, by equitable distribution of profit and especially by the greatest possible increase of production. Without high production there cannot be high consumption. The most precious thing in a nation is the productive labour of the people, and the worst form of national waste is the waste of labour. By trebling output we shall be able to treble the prosperity and the happiness of the workers and of the nation as a whole, and out of a trebled national income we can easily pay the cost of the War, however large it may be.

CHAPTER VIII

THE PROBLEM OF THE TARIFF—WOULD A TARIFF HARM LANCASHIRE ?*

By far the most important British manufacturing industry is the gigantic cotton industry. During the last few years preceding the War it has produced on an average about £120,000,000 worth of cotton goods per year, of which approximately 80 per cent., or £100,000,000, were exported. Great Britain exports more cotton goods than all the countries of the world combined. At first sight Great Britain's supremacy in the cotton industry appears unchallengeable.

According to the American Census Bulletin 113 there were in the world in 1911 137,792,000 active cotton spindles. Of these the United Kingdom had 54,523,000, while the United States had only 29,515,000 spindles. In 1911 Great Britain had 39·46 per cent. of the spindleage of the world, while the United States had only 21·1 per cent. The United States exports of fully manufactured cotton goods come to only £4,000,000 or £5,000,000 per year. The spindleage of the British cotton industry is almost twice as large as that of the American cotton industry, while the British export trade in cotton goods is about twenty times as large as the American export trade. However, closer examination of the cotton industry in the two countries reveals the fact that the

* From *The Nineteenth Century and After*, August, 1912.

United States cotton industry is far more powerful than it is generally believed to be in Great Britain.

Although the United States have only a little more than half as many spindles as the United Kingdom, they consume far more raw cotton than does Great Britain, the figures being as follows:

CONSUMPTION OF RAW COTTON IN 1911.

	<i>Bales.</i>
United States	4,705,000
United Kingdom	3,782,000

The fact that the United States, notwithstanding their very marked inferiority in spindles, consume much more cotton than the United Kingdom seems very strange. Englishmen who are insufficiently acquainted with the American cotton industry glibly explain that the Americans with fewer spindles use more cotton than the British because the United States, having an inferior cotton industry, make chiefly the coarser yarns, while Great Britain, having the cream of the cotton trade of the world, specialises in the finest yarns and tissues, leaving the coarse manufacture to other nations. That explanation is currently given, and it seems very plausible, but unfortunately it is not quite correct. The American and the British cotton spindles are implements of different character. Great Britain uses nearly exclusively mule spindles, while the United States rely almost entirely on ring spindles. Vast quantities of yarn, identical to that which is made on ring spindles in America, is made on mule spindles in Great Britain. Employed on the same yarn, ring spindles consume 50 per cent. more raw cotton and produce 50 per cent. more yarn than do mule spindles. Ring spindles are labour-saving spindles. Consequently they are preferred not only by American cotton spinners, but by German and Japanese cotton spinners as well.

It seems that British conservatism is largely to blame for the small percentage of ring spindles running in Lancashire. Ring spindles represent greater output and greater mechanical efficiency. The American cotton industry seems to be more efficient than the British cotton industry, not only in the spinning department, but in the weaving department as well, as will be shown later on.

Let us now test the often-heard assertion, "The British cotton industry is the largest in the world." According to the number of spindles used, the British cotton industry is indeed the largest in the world. According to the quantity of cotton used, the United States cotton industry is the largest in the world. Should we, then, measure the importance of the cotton industry by the spindaleage or by the consumption of raw cotton? The best measure of the importance of an industry is evidently not the quantity of machinery employed, nor the quantity of raw material worked up, but the value of its finished productions. As regards Great Britain we have no exact official figures regarding the value of the output of the cotton industry, but merely unofficial estimates by experts, which are fairly reliable. According to these the total value of the cotton goods produced in Great Britain should in 1909 have amounted to about £100,000,000 or £110,000,000 at factory. The United States combine with their census of population a census of production. According to the last census—that of 1910—the value of the cotton goods produced by the United States in the year 1909 was no less than \$628,391,813, or £125,678,365.

There can be no doubt that the American cotton industry has overtaken the British cotton industry, not only in the quantity of raw material worked up, but also in the value of cotton goods manufactured. The outlook for the Lancashire industry is serious. In 1880 Great Britain made considerably more steel than the United

States. Now the United States make four times as much steel as Great Britain. The United States cotton industry has been growing, and continues growing with incredible rapidity, while ours is growing but slowly. It is to be feared that before long America's supremacy in cotton manufacturing may be as great as her present supremacy in manufacturing steel, unless we take suitable steps in time.

The prosperity of an industry may be measured by its progress and expansion. How wonderfully the United States cotton industry has flourished and increased will be seen from the following figures :

<i>Year.</i>	<i>Consumption of Raw Material.</i>	<i>Value of Cotton Goods Produced.</i>
	<i>Bales.</i>	<i>Dols.</i>
1860	841,975	115,681,774
1870	1,026,583	177,489,739
1880	1,865,922	192,090,110
1890	2,604,491	267,981,724
1900	3,603,516	332,806,156
1910	4,516,779	628,391,813

Since 1860 both the consumption of cotton in the United States and the value of the goods produced from it have grown more than fivefold. During the same period the value of the cotton goods produced in Great Britain has about doubled, while the consumption of raw cotton has less than doubled. In the last decade, 1900-1910, alone the consumption of raw cotton in the United States has grown by almost a million bales, while the value of the cotton goods produced has very nearly doubled. The progress of the United States cotton industry during the last decade bodes ill for the cotton industry of Great Britain.

The frequently heard taunt that the United States produce only the coarse cotton fabrics which Lancashire does not care to manufacture is quite unjustified. The American cotton industry works practically exclusively for the home market. It works for a prosperous nation which demands goods of quality. The British cotton industry, which exports four-fifths of its produce, works chiefly for foreign nations. Now, two-thirds of the British cotton exports go, not to the wealthy people in Europe, North America, and Australia, but to the poverty-stricken nations of Asia, to India, China, and Asiatic Turkey, to nations which can afford to buy only the cheapest and the flimsiest materials. A visit to the United States shows that the cotton goods generally sold in that country are certainly not inferior in quality to those sold and worn in Great Britain. As less than 2 per cent. of the cotton cloth sold in the United States is imported from abroad, it is clear that the bulk of the cottons which one sees in the shops are of American manufacture, and that the British cottons made for the British market and the American cottons made for the American market are approximately of equal quality.

The American cotton industry shows two remarkable tendencies: the tendency to grow at a truly astonishing pace and the tendency to manufacture the finest goods to an ever greater degree. Between the years 1899 and 1909 the production of cotton yarn in the United States increased from 1,467,565,971 pounds to 2,037,653,722 pounds, or by 39 per cent. However, while the production of coarse yarn (No. 20 and under) increased by only 19·2 per cent., that of medium numbers (Nos. 21 to 40) increased by 60 per cent., and that of fine yarns (No. 41 and over) by no less than 103·7 per cent. In 1899 the coarse yarn constituted 58 per cent. of the total production, but in 1909 it constituted only 49 per cent. On the

other hand, the proportion of medium yarn increased from 37 per cent. in 1899 to 42·5 per cent. in 1909, while that of fine yarn increased from 5·2 per cent. to 7·7 per cent. during the same period. The progress in quality has been as remarkable as the progress in quantity. The finest cottons sold in the United States, some specialties excepted, are, as I have been told, of American make.

How greatly the growth of the American industry has benefited American labour will be seen from the following remarkable table which is compiled from the American censuses:

<i>Year.</i>	<i>Number of Workers in Cotton Industry.</i>	<i>Total Wages per Year.</i>	<i>Wages per Worker per Year.</i>
		<i>Dols.</i>	<i>Dols.</i>
1860 ..	122,028	23,940,108	196.00
1870 ..	135,369	39,044,132	288.00
1880 ..	174,659	42,040,510	240.00
1890 ..	218,876	66,024,538	301.00
1900 ..	297,929	85,126,310	285.00
1910 ..	378,880	132,859,145	350.00

The meaning of the foregoing table will be clear by comparison with Great Britain. From the British censuses and other Government publications I have extracted the following figures:

NUMBER OF WORKERS IN THE COTTON INDUSTRY.

<i>In Great Britain.</i>			<i>In the United States.</i>		
1881	487,777		1880	174,659	
1891	546,015		1890	218,876	
1901	529,131		1900	297,929	
Difference	+ 41,354		1910	378,880	
			Difference	+ 204,221	

As the figures relating to the British cotton trade in 1911 are not yet available, I have given those for 1901. It will be noticed that the number of British cotton workers increased by 58,000 during the decade 1881-1891, and decreased by 17,000 during the decade 1891-1901. Since 1901 the number of British cotton workers may have remained stationary, though probably it has decreased. While during the decade 1891-1901 the number of British cotton workers *decreased* by 17,000, the number of American cotton workers *increased* by 79,000 during the corresponding decade 1890-1900. If we assume that the number of British cotton workers has remained stationary since 1901, we come to the extraordinary conclusion that the American cotton industry, which, measured by the quantity of raw material used and the value of goods produced, has an output approximately 25 per cent. larger than that of Great Britain, produces that larger and more valuable output with 150,000 fewer workers. If we divide the value of the output by the number of men employed, it appears that the output of the cotton workers in the two countries comes, in round figures, to £200 per worker per year in Great Britain and to £340 per worker per year in the United States. These extraordinary figures confirm the fact that the cotton industry of the United States possesses a far greater efficiency than the cotton industry of Great Britain.

The very valuable Report on Cotton Manufactures (Doc. 643, 62nd Congress, 2nd Session) published by the United States Tariff Board, an absolutely impartial American Government institution, contains a table giving the earnings of British and American cotton workers, and these compare, in the most important grades, as follows:

		<i>United Kingdom.</i>	<i>Northern States.</i>	<i>Southern States.</i>
Weavers, male (piecework)	..	100.00	155.5	132.9
Weavers, female (piecework)	..	100.00	178.6	142.5
Mule spinners, medium ..	..	100.00	147.3	—
Mule spinners, fine ..	..	100.00	135.0	—
Mule spinners, very fine ..	..	100.00	145.0	—
Ring spinners, female (time) ..	..	100.00	182.7	—
Ring spinners, female (piece)	..	100.00	183.4	128.8
Spoolers, female (time) ..	..	100.00	204.8	170.5
Spoolers, female (piece) ..	..	100.00	182.3	131.2
Fine and jack frame tenders (time)		100.00	203.0	—
Fine and jack frame tenders (piece)		100.00	179.8	154.5
Reel tenders, female (time) ..	..	100.00	256.9	—
Reel tenders, female (piece) ..	..	100.00	293.3	—

The American cotton industry has been a very satisfactory industry to the workers. Between 1860 and 1910 the number of workers has more than trebled, and the wage paid per worker has practically doubled. Besides, the proportion of men employed in the American cotton industry has been constantly increasing, while that of the women and children has been consistently shrinking. The official record is as follows:

PERCENTAGE OF UNITED STATES COTTON WORKERS.

<i>Year.</i>	<i>Men over Sixteen Years.</i>	<i>Women over Sixteen Years.</i>	<i>Children under Sixteen Years.</i>
	<i>Per Cent.</i>	<i>Per Cent.</i>	<i>Per Cent.</i>
1870 ..	31.60	51.45	16.95
1880 ..	35.36	48.42	16.22
1890 ..	40.58	48.71	10.71
1900 ..	45.09	41.52	13.39
1910 ..	50.92	38.70	10.38

In 1910 the staff of the American cotton industry was composed of 192,930 men, 146,644 women, and 39,306

children under sixteen years of age. The British cotton industry employs fewer men than the American cotton industry, but it employs about 150,000 more women. The study of the British decennial censuses shows that the British cotton industry is becoming more and more a women's industry. This appears from the following figures:

PERCENTAGE OF FEMALE WORKERS IN THE BRITISH COTTON INDUSTRY.

	<i>Per Cent.</i>		<i>Per Cent.</i>
1861 56·7		1891 60·9	
1871 59·8		1901 62·8	
1881 62·0			

While in America the proportion of women workers has constantly and very rapidly been shrinking, the proportion of women workers in Great Britain has been constantly and rapidly increasing. Women should work, not in the factory, but in the home. The fact that we have been gradually increasing the proportion of women workers at the very time when the Americans have been greatly reducing it, and that the proportion of women workers is almost twice as great in Great Britain as it is in America, is very humiliating to this country.

The fact that the British cotton industry is far less efficient than the American cotton industry is noticeable not only in the spinning department, as has already been shown, but in the weaving department as well. On this point the very reliable and impartial Report on Cotton Manufactures, published by the United States Tariff Board in 1912 states:

English looms run somewhat faster than the looms in this country, but the number of looms tended per weaver is usually much less than here. This is in marked contrast to the woollen industry, where the number of looms

tended is about the same in the two countries. In the case of plain looms (not automatic) the English weaver seldom tends more than four looms, while in this country a weaver rarely tends less than six, and more frequently eight, or even twelve, if equipped with "warpstop motions." Furthermore, English manufacturers make little use of automatic looms, of which there were less than 6,000 in May, 1911, in the whole of England, while in the United States there are well over 200,000. It is estimated that there are now about 10,000 of these looms in use in England, and about 15,000 on the Continent. Where automatic looms can be used, a single weaver commonly tends twenty looms, and sometimes as many as twenty-eight. The result is that whereas the output per spinner per hour in England is probably as great as, or greater than, in this country, the output per weaver per hour is, upon a large class of plain goods, less, and in the case where automatic looms are used in this country and plain looms in England it is very much less.

Several reasons are advanced for the delay in the more general adoption of the automatic loom in England. For one thing, the automatic loom costs about two and a half times the ordinary plain loom, and this has deterred many English mills already equipped with plain looms from adopting them. Again, English mills do not run such a large number of looms on a single-standard fabric as do American mills, and the automatic loom has not been found so suitable as plain looms for the varied Lancashire trade in dhoties (loin-cloths) and other fancies. Furthermore, the automatic loom requires stronger and better warp yarn than the plain loom, for the breakage of a single warp thread stops the loom. The American mills use strong ringspun warp yarns; while a large portion of the English mills, producing mainly for the poorer classes of the Orient and other regions, have to size heavily to make goods cheap enough, and they ordinarily use a much lower grade of yarn than would American mills for fabrics that pass under the same trade name. The warp yarns used in the bulk of English cloths are mule spun; and since they are soft twisted to enable them to take up a larger amount of sizing,

and to give the required feel to the cloth, they are not so suited to the automatic loom as are the stronger American yarns.

An additional reason for the limited use of the automatic looms appears to be the objection to them of the labour unions, which have been afraid that they would be used to displace labour and to throw more work on the weaver without proportionately increasing his earnings.

When I was in Boston I made the acquaintance of Mr. Eben Draper, a partner in the celebrated Draper firm, which manufactures these wonderful automatic looms. When I asked whether many of his looms were sold in Lancashire he smiled and said: "The English are conservative people. They run only a few. I believe the masters find them too dear, and the men won't work them. I suppose they will begin buying our looms when they have lost their trade." His opinion is confirmed by the American Government authorities.

I have watched the performance of plain and automatic looms, and it seems to me perfectly inconceivable that the latter should be almost unknown in Lancashire.

The cost of carriage of raw cotton from the United States to England is so very small that raw cotton is practically no dearer in Lancashire than in the textile districts of the United States. On the other hand, the establishment costs—that is, the costs of the necessary buildings, machinery, etc.—are very much higher in America than in England. The principal ingredient in the cost of every article consists in the wages paid in its production. The wages of the American brickmakers, bricklayers, labourers, founders, engineers, etc., are twice, and more than twice, as high as are British wages. Herein lies the reason that the establishment expenses are so much higher in America than in Great Britain. On this point the Report already mentioned states:

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The cost of the building for the spinning mill is \$3.27 per spindle in the United States, as compared with \$2.40 per spindle in England. The textile machinery for the spinning mills amounts to \$4.84 per spindle in this country, and \$2.80 per spindle in England. The total cost of the spinning mill complete in the United States is \$543,401.04, against \$396,367.77 in England, or per spindle the cost is \$10.83 in this country and \$7.92 in England, the latter being about 73 per cent. of the total cost in the United States.

Comparing the weaving mills, the cost of the building is shown to be \$2.88 per spindle in the United States and \$1.58 per spindle in England. The textile machinery for the weaving mill amounts to \$1.70 per spindle in this country and \$1.16 per spindle in England. The total cost of the weaving mill complete in the United States is \$331,178.00, as compared with \$240,284.70 in England, or, on a spindle basis, this is \$6.60 in the United States and \$4.80 in England, the latter being about 73 per cent. of the total cost of the weaving mill in the United States.

Referring to the grand total cost of spinning and weaving mills, it will be seen that in the United States the cost is \$17.43 per spindle, as compared with \$12.72 per spindle in England, the cost in England being 73 per cent. of the cost in the United States.

If we now compare the general conditions under which the British and American cotton industries work, we find that, while the price of raw cotton is practically the same in the two countries, the American manufacturers pay far more for their buildings, for their machinery, and especially for their labour, than do British manufacturers. At first sight one would, therefore, think that the greater cost of buildings, machinery, and labour in America should make American cotton goods far dearer than British cotton goods. Comparison of American and British shop prices seem to confirm this conclusion. Bought retail, American cotton goods are, indeed, considerably dearer than British cotton goods. However,

closer examination reveals the surprising fact that, notwithstanding the far greater establishment and labour costs involved, American cottons are no dearer if bought wholesale than are British cottons. On this point the Report quoted states:

The conclusion that under present methods of production on many plain fabrics the cost of production is not greater in this country is also borne out by a comparison of English and American mill prices. A comparison of such prices on a large variety of these fabrics in England and the United States for the date July 1, 1911, shows that in the case of plain goods the American price at the mill was in no case much above the English mill price, while in the majority of cases it was lower. It should be noted, however, that American prices of this date, relative to the price of cotton, were somewhat lower than normal. The English prices are the regular quotations for the home market.

How is it that, notwithstanding the far greater establishment costs and the far higher wages paid in America, the American mill price of cottons was found to be "in no case much above the English mill price, while in the majority of cases it was lower"? The American Government Report answers that question as follows:

In the case of a large variety of plain goods, the labour cost of turning the yarn into cloth in the United States is no greater, and in some cases lower, than in England. For cloths woven on automatic looms this is especially the case; but on certain classes of fabrics the same holds true for plain looms, due to the greater number of looms per weaver in this country. This does not necessarily indicate any individual superiority on the part of the American weaver. It is a matter of difference in industrial policy, and it explains the difference in the methods of production which prevail at the present time. Where the automatic loom is now used in England a weaver frequently tends twenty looms, as is done in the United States.

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Finishing is a very important process in cotton manufacture. Finishing includes the processes of bleaching, printing, dyeing, mercerising, etc. But finishing also is no dearer in America than in Great Britain, notwithstanding the greater establishment expenses and higher labour costs. On this point the authority mentioned states:

A comparison of sixty specific samples for which finishing data were obtained shows that in most cases the differences between the charges in the two countries were slight, but that the American charge was slightly lower on most of the samples.

The explanation of the curious fact that America produces cottons as cheaply as Great Britain, and in many instances more cheaply than Great Britain, although establishment costs and wages are far higher in America than Great Britain, may be summed up in two words: greater efficiency. I think the foregoing official statements, which are based on a large number of individual comparisons, absolutely prove that, compared with the American cotton industry, the British cotton industry has stood still, and that it can learn much from the United States.

The fact that the American retail prices of cotton goods are higher than British retail prices is shown in the American Government Report to be caused by the different methods of distribution obtaining in the two countries, and by the differences in the profits made by middlemen and retailers. English cottons are distributed over the narrow territory of England, and are sold by poorly paid clerks and assistants. The American cottons are sold over an enormous territory, and therefore require far heavier charges for freight and all the other expenses of distribution. Besides, the American sales-

men and saleswomen receive far higher wages than their ill-paid British colleagues.

It is generally believed in Lancashire that the British cotton industry is the most efficient cotton industry in the world, and that it has nothing to learn from other nations. That belief is very largely based on the erroneous idea that practically all other nations manufacture cotton with English machinery. When I talked to leading Lancashire men about the greater efficiency of the American cotton industry, they told me that the American could not be more efficient than the English industry because the American cotton men employed chiefly British machinery. During my visit to America I did not see any British machinery in the American cotton mills and factories which I was allowed to inspect, and I was told that the proportion of English machinery used was practically nil.

From the Report on Cotton Manufactures by the United States Tariff Board, it appears that more than 99·7 per cent. of the looms used are of American make, and only 0·3 per cent. of foreign make. Of the ring spindles, 99·9 per cent. are of American make, and 0·1 per cent. are of foreign make. These two items, by far the most important, are almost exclusively furnished by American makers. Of the roving or jack spindles, 85·8 per cent. are of American, and 14·2 per cent. of foreign manufacture. Of the cards, 83·7 per cent. are of American, and 16·3 of foreign make. Of the mule spindles, 83·1 per cent. are American made, and 16·9 per cent. are imported. It appears, therefore, that the American cotton industry is run almost exclusively by American machinery. Only in the older mills and factories are English machines to be found. American cotton manufacturers with whom I discussed the subject were unanimous in praising the superiority of the American machines, and I think

British cotton-makers will be wise in studying the American machines and general factory organisation and arrangements.

Hitherto Lancashire has opposed Tariff Reform with the cry, "Tariff Reform will destroy the British cotton trade." Lancashire men have argued that Tariff Reform by raising wages would raise the cost of production; that the increased cost of production would find its expression in higher prices for cottons; and that the higher prices of cotton goods would bring about the loss of a large part of our great export trade. The fear of the Lancashire men seems scarcely justified in the light of the facts given in the foregoing pages; for I have shown, by means of unimpeachable expert evidence, that the price of the output of the American cotton industries is, as the Official Report puts it, "in the case of plain goods in no case much above the English mill price, while in the majority of cases it is lower." I have also shown by means of unimpeachable evidence that the American cotton industry pays about 40 per cent. more for buildings and machinery and from 50 per cent. to 100 per cent. more for wages than does the British cotton industry. Now, I do not think that the most passionate, the most narrow-minded, or the most reckless defender of Free Trade is prepared to assert that Tariff Reform will raise the cost of buildings and machinery in Lancashire by 40 per cent., and that it will raise British cotton wages by from 50 to 100 per cent. But let us assume for argument's sake that Tariff Reform would have this twofold effect. Would it then "destroy" the British cotton industry or, at least, the British export trade in cottons? If the American cotton industry can produce cotton goods partly at about the same price as England, and partly at lower prices than England, although it pays about 40 per cent. more for

buildings and machinery and from 50 to 100 per cent., more for wages than the English cotton industry, it is perfectly clear that Tariff Reform will not destroy the British export trade in cottons by raising the price of cotton goods, even if it should increase the cost of our buildings and machinery by 40 per cent. and the wages of our cotton operatives by from 50 to 100 per cent., provided the British cotton industry was run on American lines. To put the matter in other words, one might say that if we made our cotton goods in accordance with American methods we could afford to pay 40 per cent. more for buildings and machinery, and from 50 to 100 per cent. more for wages, without being compelled to raise the prices of cotton goods to the consumer. However, Tariff Reform would not only not destroy our cotton industry, but would greatly benefit it. The present outlook for the Lancashire cotton industry is uncertain and distinctly disquieting. India and China are Lancashire's best customers. The Japanese cotton industry consumes considerably more than one million bales of cotton per year, and works with extremely cheap labour. It is very rapidly expanding, and, according to the reports of our Consuls in China, it is rapidly ousting the Lancashire cotton industry from the Chinese market. The Japanese have lately begun to encroach upon our Indian market as well.

As very few people are aware how wonderfully the Japanese cotton industry has progressed, and how seriously it is threatening the British cotton industry in neutral markets, especially in the markets of the Far East, I would give a few figures which should be of great interest not only to British cotton men, but to all who have the prosperity of British manufacturing industries at heart.

JAPANESE COTTON INDUSTRIES.

<i>Year.</i>	<i>Imports of Raw Cotton.</i>	<i>Exports of Cotton Yarn.</i>	<i>Exports of Shirtings.</i>
	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>
1891 ..	6,998,534	7,873	None
1894 ..	19,103,923	955,530	None
1897 ..	43,122,263	13,490,197	346,036
1900 ..	58,500,002	20,589,263	1,754,411
1903 ..	68,206,725	31,418,614	2,424,253
1906 ..	81,293,860	35,303,526	7,353,713
1910 ..	157,823,603	45,346,964	6,541,873
1913 ..	231,480,883	70,997,538	11,198,348

<i>Year.</i>	<i>Exports of Cotton Drill.</i>	<i>Exports of Underclothing.</i>	<i>Exports of Towels.</i>
	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>
1894 ..	None	None	None
1897 ..	None	76,337	189,773
1900 ..	None	235,056	356,322
1903 ..	215,883	785,697	953,363
1906 ..	864,837	2,563,972	2,174,962
1910 ..	5,083,185	6,011,532	1,838,117
1913 ..		8,847,418	2,641,576

A yen is equal to 2s. 0½d.

In 1877 the Japanese Government placed orders in England for machinery sufficient to start several small experimental cotton spinning mills in different parts of the country. In 1882 the first joint-stock cotton spinning mill was organised at Osaka, with a mill equipment of but 10,500 spindles. Since then the development has been rapid. By 1890 there were 277,895 spindles in the country. In 1900 there were 1,320,988 spindles; and in 1911, according to the Statistical Handbook of the Japanese Cotton Spinners' Association, there were 2,099,764 spindles.

British cotton spinners and weavers speak more often of the cotton industries of Austria-Hungary, Belgium and Switzerland than of those of Japan. Yet the Japanese cotton industry alone consumes as much cotton as these three highly developed European countries combined. The United States Census Bulletin 113 supplies the following figures:

CONSUMPTION OF RAW COTTON IN 1911.

	Bales.
Japan	1,060,000
Austria-Hungary	749,000
Belgium	217,000
Switzerland	100,000

Twenty years ago the Japanese had practically no cotton industry, and ten years ago they had practically no export trade in cotton manufactures. Since then Japan has become one of the most important cotton-manufacturing countries in the world. She has practically a monopoly of the Japanese home market, and her exports have increased in a truly startling manner, as is shown above. Japan's importance as an exporter of cotton yarns will appear from the following figures, which are taken from the American Tariff Board Report:

EXPORTS OF COTTON YARNS IN ORDER OF THEIR IMPORTANCE
IN 1910.

	Dols.
United Kingdom	64,908,306
British India	29,130,162
Japan	22,582,788
Germany	7,873,754

In the exportation of cotton yarn, Japan, which but a few years ago had no cotton industry, occupies now the third place among the nations of the world. In 1894 she exported 955,530 yen of cotton yarn, and in 1910 she exported 45,346,964 yen of cotton yarn.

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To which countries does Japan export her cotton goods? That question is answered as follows by the official statistics of Japan:

JAPAN'S EXPORTS OF COTTON YARNS TO CHINA.

					<i>Yen.</i>
1894..	..	..	..	..	876,805
1904..	..	..	..	..	24,145,213
1910..	..	..	..	..	40,747,662
1913..	..	..	..	..	60,095,834

JAPAN'S EXPORT OF COTTON TOWELS TO INDIA.

			<i>Yen.</i>
1903	..	..	18,167
1910	..	..	349,345
1913	..	..	503,090

JAPAN'S EXPORTS OF COTTON UNDERCLOTHING TO INDIA.

			<i>Yen.</i>
1903	..	..	455,758
1910	..	..	4,390,491
1913	..	..	4,734,432

China used to buy her cotton yarn from Great Britain and India. Since 1894 Japan's yarn exports to China have grown seventyfold, and to-day Japan has in yarn practically the monopoly of the Chinese market. Mr. Alfred B. Shepperson, the great American authority, wrote in his book, *Cotton Facts*, with which every cotton manufacturer is familiar:

For the lower kinds of yarn (say up to twenty) the Japanese mills practically control their own and the Chinese markets against the competition of England and India, and will continue to do so. I think Japan's exports of cotton manufactures will continue to increase. Her mills, so far, have manufactured chiefly the lower grades of yarns and goods, but there is no reason why they should not successfully compete with Europe in the manufacture of better descriptions.

As the Japanese mills are usually run during twenty two hours every day, and as there are two sets of operatives working eleven hours per day for daily wages which range from sixpence to a shilling for grown-up persons,

Japan's competition in the Far Eastern markets is bound to become extremely menacing to Great Britain as soon as the Japanese cotton manufacturers have succeeded in extending their industries in accordance with their wishes. How severely the British cotton industry is already pressed by Japan in the Far Eastern markets, and especially in China, Manchuria and Korea, which lie nearest to the shores of Japan, is apparent from the Reports of the British Consuls. The Report from Korea, published in 1911, states:

The main feature revealed by a study of the figures is the headway made in 1910 by Japanese, as compared with British, goods. Thus, the total imports of coarse sheeting and grey shirtings increased by £93,000—entirely accounted for by Japanese imports—while British goods declined slightly.

In the Consular Report for 1910 on Newchang we read:

My predecessor called attention in his Report for 1909 to the pressure of Japanese competition, and the returns for 1910 bear eloquent testimony to the pertinency of his remarks. While Japanese articles have increased in almost every line, those of British and American origin have been imported in reduced quantities and values. Thus, we have Japanese grey shirtings 14,501 pieces, in place of 9,700 pieces in 1909 and 1,800 in 1908, while American shirtings have fallen from 153,331 to 137,005 pieces, though at an advanced price, and British from 112,370 to 85,850 pieces. Japanese sheetings were 151,400 pieces in 1908, 185,585 pieces in 1909, and 244,544 pieces in 1910; American sheetings were 601,541 pieces in 1909, but only 325,590 pieces in 1910. British sheetings were 26,115 pieces in 1909 and 11,350 pieces in 1910. In drills a similar phenomenon is observable.

Many similar Reports from British Consuls might be quoted which show that the Japanese cotton manufacturers are ousting the British from the Chinese markets.

What is the reason of Japan's success? The answer is supplied by Mr. H. H. Fox, the Acting Commercial Attaché to His Majesty's Legation at Pekin. He wrote in his Report on China for the year 1910:

The two outstanding features in the trade of cotton piece goods in 1910 are the serious shrinkage in the imports of British and American plain fabrics, largely due to the high prices prevailing for American cotton and the increased import of Japanese cotton goods, which could be laid down in China at prices ranging from 25 per cent. to 40 per cent. less than Manchester goods. The decline is most marked in the case of British shirtings, which decreased by some 2,000,000 pieces, white sheetings 2,000,000 pieces, and American sheetings and drills 2,400,000 pieces, a total decline in plain staples of 6,000,000 pieces.

Continuing, the Consul gives a table showing that between 1909 and 1910 the importation of British cottons into China *decreased* by 4,180,322 pieces, whilst the importation of Japanese cotton goods into China has, during the same period, *increased* by 993,666 pieces. If the Japanese can, as the Commercial Attaché reports, lay down their piece goods in China "at prices ranging from 25 per cent. to 40 per cent. less than Manchester goods," British competition is, of course, quite useless and futile. It is merely a question of time when Japan will have the monopoly of the Chinese market, not only in cotton yarn, but also in cotton cloth.

So far, Japan has concentrated her efforts upon manufacturing for the home market and exporting goods to China, Korea, and Manchuria, which are nearest to her shores. Hitherto she has sent only a few things to India, but in India also her sales are increasing at an ominous rate, as has been shown in the foregoing. In 1903 she sent cotton towels to India to the value of 18,167 yen.

In 1910 she had increased these exports to 349,345 yen. Japan's exports of cotton underclothing to India have increased from 455,758 yen in 1903 to 4,390,491 yen in 1910. British India is the most important foreign market of the British cotton industry. If Japan can lay down her cottons in China "at prices ranging from 25 per cent. to 40 per cent. less than Manchester goods," and thus make British competition hopeless and futile, she can presumably also sell her cottons at prices ranging from 25 per cent. to 40 per cent. less than Manchester goods in India. Under free competition it is only a question of time when Japan will have a monopoly of the Indian market similar to that which she is creating for herself in the Chinese markets. At present the Japanese cotton industry is expanding so rapidly that it seems likely that Japan will swamp India with her cottons before long.

Lancashire has lost the Japanese market. It will probably lose the Chinese market within a few years, and it will eventually lose the Indian market as well unless the Indian market is reserved to Lancashire under a system of Imperial preferences. That is its only hope. Lancashire can compensate itself for the probable loss of the Chinese market by preferential arrangements for her cottons not only with India, but with all the other British Dominions and Colonies, which, with their rapidly growing population, are bound to be ever more valuable customers.

Tariff Reform would benefit Lancashire not only in the foreign markets, but also, and most particularly, in the British home market. It is obvious that Tariff Reform, by raising British wages, will greatly increase the purchasing power of the British population, and with it the demand for cotton goods. The enormous and scarcely suspected possibilities of the British home

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market as a consumer of cotton goods can most clearly be expressed in two lines as follows:

Home trade in cottons in United States in 1909 ..	120,000,000
Home trade in cottons in United Kingdom in 1909 ..	20,000,000

The United States, with a population exactly twice as large as that of the United Kingdom, consumed in 1909 exactly six times as large a quantity of cotton goods as the United Kingdom. In other words, the average American family bought in 1909 three times as many shirts, sheets, handkerchiefs, etc., as the average British family. The figures £20,000,000 for Great Britain and £120,000,000 for the United States are practically manufacturers' cost prices. As the charges and profits of the middleman are far larger in America than in Great Britain, it follows that the American public expends, not six times, but from eight to ten times as much money on cotton goods as does the British public. We may therefore safely say that the average American family buys every year three times as large a quantity of cotton goods, and spends every year from four to five times as much money on cotton goods of every kind, as the average family in Great Britain.

Our cotton industry suffers from the narrowness and insufficiency of the British home markets. It suffers from the poverty of our working population, which has to stint itself of cotton goods. What prevents the average British family spending as much on cotton sheets, shirts, etc., as is spent by the average American family? Chiefly the insufficiency of British wages, which all Tariff Reformers wish to raise, and which, no doubt, they will be able to raise considerably under Tariff Reform. Universal experience has shown that the introduction of a tariff has that effect upon the wages of labour. If our people were as prosperous as the American people, our

cotton industry should theoretically be able to sell every year in the British home market from four to five times as large a quantity of cotton goods as it does at present. It should sell, in the United Kingdom alone, cotton goods to the value of from £80,000,000 to £100,000,000. It is, of course, doubtful whether our workers will become as prosperous as the American workers. Besides, if they should become as prosperous, they might not be as lavish in their expenditure on cotton goods. They might prefer some more exhilarating form of spending their money. However, it seems perfectly fair to assume that under improved industrial conditions, which Tariff Reform and intensified production all round will no doubt bring about, every British family should spend half as much money as the average American family. That is, surely, a conservative estimate. In that case we should have a sale of cotton goods in the home market of about £50,000,000 per year. If British wages were better, the home market should easily be able to absorb an additional £30,000,000 worth of British cottons. This, therefore, is another reason why Lancashire should support Tariff Reform.

Apart from this more remote benefit, Tariff Reform would bring an immediate benefit to the British cotton industry in the home market. Very few people are aware that Great Britain is an enormous importer of foreign cotton goods, which enter this country in constantly growing quantities, as the following figures show:

IMPORTS OF COTTON MANUFACTURES INTO GREAT BRITAIN.

	£		£
1895	4,303,840	1910	9,823,551
1900	5,194,351	1911	10,379,151
1905	8,108,474	1913	12,250,000

The cotton goods imported into Great Britain during 1911 were classified as follows :

Piece goods, printed, dyed, or coloured	2,581,076
Others	187,100
Gloves	590,688
Hosiery	2,085,318
Lace	2,539,402
Ribbons and trimmings	1,176,577
Unenumerated	1,218,990
Total	10,379,151

It will be noticed that the cotton goods imported into Great Britain in 1911 were not coarse yarns and piece goods, but belonged almost exclusively to the highest class. They were goods which were made valuable owing to the large amount of labour contained in them. It is probably an understatement to say that of the £10,379,151 of cotton goods imported into Great Britain in 1911, £7,000,000 represented wages of labour and profits of manufacturers and middlemen. The bulk of these £7,000,000 could be secured to British manufacturers, middlemen and wage-earners by Tariff Reform. Comparison will show how enormous is the amount of cotton goods imported into this country. Cotton piece goods constitute 75 per cent. of our cotton exports. Of these we sent the following to those European countries enumerated in the monthly accounts of trade and navigation and the United States:

BRITISH EXPORTS OF COTTON PIECE GOODS IN 1911.

	£
To France..	423,662
To Germany	2,094,425
To the Netherlands	988,514
To Belgium	769,900
To Switzerland	1,594,236
To Italy	341,100
To Portugal, Azores and Madeira	487,420
To Greece	376,926
To Roumania	608,262
To Denmark	403,334
To United States	1,858,716
Total	<u>9,946,495</u>

In 1911, therefore, the foreign cotton goods which we imported were of greater value than the piece goods which we exported to all the countries enumerated in the foregoing table.

To our cotton industry the Chinese market is second in importance only to the Indian market, which is by far our largest outlet. In 1911 we sent to China, inclusive of Hongkong, cotton goods of all kinds to the value of £10,018,219. The foregoing figures show that by a tariff we can secure to our cotton industry within our frontiers a market about as large as that afforded for cotton piece goods by all Europe and the United States combined, and considerably larger than the Chinese market. We can have it for the asking. It can be secured by Lancashire by a stroke of the pen. These figures show incidentally that we need not fear retaliation, because we can capture in the home market cotton trade of far greater value than that which we can possibly lose by retaliation. Besides, experience teaches us that a carefully drafted tariff, supported by a wise diplomacy, does not lead to retaliation or to a Customs war.

I think the Lancashire cotton industry has not understood its best interests in opposing Tariff Reform. It has opposed it through lack of knowledge. It has opposed it because it honestly believed that a tariff would have a fatal effect upon its productions, and especially upon its export trade. It has opposed it because it has not sufficiently studied its great rival, the American cotton industry, and the effect which the high Protective tariff has had upon that industry. That effect was described as follows by the United States Tariff Board in its Report:

On account of the different mill methods in this country, the domestic labour cost of weaving on a large variety of plain fabrics of wide consumption is below the foreign

cost. Except in the case of a few special fabrics, and in the case of various manufactured articles, some of which are produced in this country to a very slight extent, *the American industry practically supplies the whole consumption*. The imports of yarn in 1910 were less than one-half of 1 per cent. of the home production in pounds. The imports of cotton cloth were less than 2 per cent. of the home production in value.

Mill prices are in many cases as low in this country as in the world's markets. Where higher, as in the case of the finer classes of products, they are rarely higher by anything like the whole amount of the duty. *The effect of the present tariff, then, in most cases is not so much to add the duty to the domestic manufacturer's price as to secure him the American market;* and, in the case of most articles of widest consumption, to prevent the competition of the foreign manufacturer, either in normal or abnormal times. On account of more costly methods of distribution in this country from producer to consumer, the latter pays a decidedly higher retail price than the European consumer, even in the case of fabrics on which the cost of production and the mill price are as low here as there.

How would the simultaneous introduction of Tariff Reform and of American manufacturing methods affect the cotton workers?

It may, of course, be argued that if we introduced American labour-saving machinery we should displace 150,000 cotton workers, and that, for that reason alone, we ought not to change our manufacturing methods. That argument seems to me illogical. Experience teaches us two lessons: Firstly, that the introduction of labour-saving machinery increases the demand for manufactured articles so greatly as not to reduce, but to increase the number of workers; secondly, that a deliberate retention of antiquated methods and labour-wasting machinery inevitably brings about the ruin of industries and of the workers engaged in them. Lastly, it is not my impression

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that the American cotton workers work harder than the English. Their great output is solely due to better machinery and organisation. By clinging to its present methods and to Free Trade, Lancashire will not even succeed in maintaining its present position. It will, instead, hand over its trade in neutral markets partly to the more perfectly equipped cotton industries of the United States, and partly to the cheap labour industries of Japan and China, to the great harm of Lancashire and its workers.

It is frequently asserted that Tariff Reform would ruin our cotton industry. I think I have shown that Tariff Reform should greatly benefit it. It would raise wages substantially, increase our market for cotton goods at home, and preserve for us the markets of India and the Dominions and Colonies. It should rather lower than increase our cost of production, and therefore promote our cotton exports to foreign countries. Of the industries of this country the cotton trade should be one of the greatest beneficiaries.

CHAPTER IX

THE PROBLEM OF THE TARIFF—THE BRITISH AND THE AMERICAN MERCHANT MARINE*

FREQUENTLY when men, both in England and elsewhere, discuss the merits of Free Trade and Protection, one hears assertions such as "Free Trade has given England her supremacy on the sea," or "Protection has destroyed the American shipping trade." *Post hoc sed non propter hoc.* It is a mere coincidence that the British Merchant Marine did greatly increase and that the American Merchant Marine did rapidly decline about the time when England abandoned Protection for Free Trade.

Few people in Great Britain are aware how incredibly quickly American shipping has declined. Its downward course during the last sixty years will be seen at a glance from the following table:

TOTAL EXPORTS AND IMPORTS OF THE UNITED STATES BY SEA.
(From the Report of the Commissioner of Navigation.)

Year.	In American Vessels.	In Foreign Vessels.	Total.	Percentage carried in American Vessels.
1850	Dols. 239,272,084	Dols. 90,764,954	Dols. 330,037,038	Per Cent. 75·2
1860	507,247,757	255,040,793	762,288,550	65·5
1870	352,969,401	638,927,488	991,896,889	35·6
1880	258,346,577	1,224,265,434	1,482,612,011	17·4
1890	202,451,086	1,371,116,744	1,573,567,830	12·9
1900	195,084,192	1,894,444,424	2,089,528,616	9·3
1910	260,837,147	2,721,962,475	2,982,799,622	8·7
1913	381,032,496	3,392,028,429	3,773,060,925	10·1

* From *The Nineteenth Century and After*, October, 1912.

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In 1850 more than seven-tenths of the American foreign trade was carried in American vessels. In 1913 only one-tenth of the American trade was carried in such vessels.

In the United States and elsewhere it is frequently asserted that the Civil War "destroyed" the American Merchant Marine. That assertion is not correct. The American shipping engaged in the foreign trade was diminished not only by the attacks of hostile cruisers, but still more by being transferred from the foreign to the coasting trade; for, in the absence of adequate railways, the coasting trade had received an enormous impetus through the war which made huge transports of food and war materials necessary. The rapidity with which the American ships were so transferred will be seen from the following figures:

TONNAGE OF AMERICAN VESSELS.

<i>Year.</i>		<i>In the Foreign Trade.</i>	<i>In the Coasting Trade.</i>
		<i>Tons.</i>	<i>Tons.</i>
1861	.. .. ..	2,496,894	2,704,544
1862	.. .. ..	2,173,537	2,616,716
1863	.. .. ..	1,926,886	2,960,633
1864	.. .. ..	1,486,749	3,245,265
1865	.. .. ..	1,518,350	3,381,522
Difference	.. ..	- 978,544	+ 676,978

In the course of the war the tonnage of American vessels engaged in the foreign trade diminished by almost 1,000,000 tons, while that engaged in the coasting trade increased by almost 700,000 tons. The actual war losses suffered by the American Merchant Marine through capture and through the placing of American shipping

under foreign flags were not as great as is generally believed.

Since the time of the war the character of the American Merchant Marine has curiously changed. The shipping engaged in the foreign trade has slowly and almost continuously diminished, whilst that engaged in the coasting trade has almost continuously and very greatly increased, as follows:

TONNAGE OF AMERICAN VESSELS.

<i>Year.</i>		<i>In the Foreign Trade.</i>	<i>In the Coasting Trade.</i>
		<i>Tons.</i>	<i>Tons.</i>
1865	.. .. ..	1,518,350	3,381,522
1870	.. .. ..	1,448,846	2,638,247
1875	.. .. ..	1,515,598	3,219,698
1880	.. .. ..	1,314,402	2,637,686
1885	.. .. ..	1,262,814	2,895,371
1890	.. .. ..	928,062	3,409,435
1895	.. .. ..	822,347	3,728,714
1900	.. .. ..	816,795	4,286,516
1905	.. .. ..	943,750	5,441,688
1910	.. .. ..	782,517	6,668,966
1913	.. .. ..	1,019,165	6,817,013
Difference	.. ..	- 499,185	+ 3,436,491

During the decade 1900-1910 alone the American coastal shipping has increased by considerably more than 2,000,000 tons, a truly wonderful progress.

Many causes have contributed to the decline of the American Merchant Marine. Of these the Civil War is only one. Another cause lay in the evolution of the ship towards the middle of last century. During the sailing-ship era the United States had, as far as the shipping industries are concerned, an enormous natural advantage over the nations of Europe, and especially over thinly

wooded Great Britain, through the abundance of timber and of the other important raw materials required in shipbuilding, which were plentiful and extremely cheap in America, and which were very scarce and very dear in Europe. That advantage was lost with the advent of the iron ship.

Many people in the United States and in Great Britain believe that the decline of the maritime industries of the United States has been caused by the policy of Protection. However, according to the best American authorities, the former prosperity of the United States shipping was due, not to Free Trade, but to rigorous Protection, and the decline of the United States shipping was due, not to Protection, but to the withdrawal of Protection—to Free Trade. On that point the very important Report of the American Merchant Marine Commission, which examined all the leading shipping people in the United States, contains the following weighty pronouncement:

The American merchant fleet from 1800 to 1860 was the second in size and the most enterprising, efficient and profitable in existence. But throughout most of that time it was a protected industry—protected at first by discriminating duties and tonnage taxes, which were not completely removed against our most formidable rival until 1849; protected later by the California gold discovery and the Crimean War. When these factors lost their power, as they did in 1855-1856, there came the sharpest and most significant decline that American shipbuilding has ever suffered, in the half-decade from 1855 to 1860.

How powerful the American shipbuilding industry was even during the very period of 1855-1860, when, as we are authoritatively informed, it suffered "the sharpest and most significant decline that it has ever suffered," will be seen from the fact that the output of shipping of the United States was then equal to the tonnage built in Great Britain, while the tonnage which the United States

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-built for foreign countries was far greater than the tonnage which Great Britain built for foreign countries. On this interesting and important point Mr. E. T. Chamberlain, the Commissioner of the Bureau of Navigation, furnished the following figures to the American Merchant Marine Commission:

TONNAGE BUILT DURING THE FOUR YEARS 1858-1861.

<i>In the United States.</i>	<i>In Great Britain.</i>
849,307 tons.	883,495 tons.

TONNAGE SOLD TO FOREIGN COUNTRIES DURING THE FOUR YEARS 1858-1861.

<i>In the United States.</i>	<i>In Great Britain.</i>
101,222 tons.	74,642 tons.

Shortly before the outbreak of the American Civil War, and during a period when the American shipbuilding industry suffered "the sharpest and most significant decline that it has ever suffered," that industry was certainly as powerful as that of Great Britain, although the latter had Free Trade.

In 1871 the United States began the policy of admitting free of duty materials for shipbuilding, and gradually extended that policy. The Dingley Tariff of 1897, for instance, stated:

Section XII.—That all materials of foreign production which may be necessary for the construction of vessels built in the United States for foreign account and ownership, or for the purpose of being employed in the foreign trade, including the trades between the Atlantic and Pacific ports of the United States, and also the materials necessary for the building of their machinery, and all articles necessary for their outfit and equipment, may be imported in bond under such regulations as the Secretary of the Treasury may prescribe, and upon proof that such materials have been used for such purposes, no duty shall be paid thereon. But vessels receiving the benefit of this

section shall not be allowed to engage in the coastwise trade of the United States more than two months in any one year, except upon the payment to the United States of the duties of which a rebate is herein allowed; provided that vessels built in the United States for foreign account and ownership shall not be allowed to engage in the coastwise trade of the United States.

Section XIII.—That all articles of foreign production needed for the repair of American vessels engaged in foreign trade, including the trade between the Atlantic and Pacific ports of the United States, may be withdrawn from bonded warehouses free of duty under such regulations as the Secretary of the Treasury may prescribe.

Under this law, not only steel plates and shapes, but articles of equipment as elaborate and costly as ships' compasses, were imported free of duty for the use of vessels built in the United States for the foreign trade, and for the coastwise trade between the Atlantic and the Pacific. As freight is cheap, and as all nations habitually sell their wares cheaper in the foreign than in the home market, the United States could obtain their raw materials required for shipbuilding as cheaply as the shipbuilders of the United Kingdom. It is therefore clear that Protection has not caused the decline of the United States shipbuilding industry, which has continued since 1897 notwithstanding the abrogation of all duties on imported materials for shipbuilding. On this point Mr. E. T. Chamberlain wrote in his Official Report on Navigation of 1909: "Among the fanciful causes for the decline of the American Merchant Marine the high tariff is sometimes included. Senator Gallinger wrote in his Report "Development of the American Ocean Mail Service and American Commerce" (60th Congress, 1st Session, doc. 225):

Any shipowner or builder who desires to send to Scotland for his steel plates and shapes and other materials,

not only for the construction, but for the equipment and repair of the vessel for the deep-sea trade or for the coast-wise trade between our Atlantic and Pacific ports, could have brought in such materials by the shipload, and received a rebate of every penny of the duty. If our ocean fleet has not increased, it has not been for lack of free access to the free materials of the world; it has not been because of the "extortion" of any trust or the "barriers" of a protective tariff. The truth is that "free materials" alone, as has so often been demonstrated, are not a determining factor in the prosperity of any industry.

The American protective system reaches no farther than the land frontiers, for the sea is open to all. Free Trade prevails on the sea. The decline of the shipbuilding and shipping industries of the United States is due—and this fact is most important—neither to the Civil War nor to Protection, but to the absence of Protection for American shipping on the seas.

Protection has brought many of the manufacturing industries from Europe to the United States, and has made them exceedingly prosperous and powerful. Owing to the rapid and continuous expansion of the manufacturing industries, employment in America is excellent as a rule, and there is work for all who will work. Besides, the high import duties which were imposed for the purpose of protecting "the American standard of living" have maintained American wages at a level which is approximately twice as high as that of British wages. The cost of ships consists of two factors, the price of raw materials and the wages paid in shipbuilding. Now, although the American shipbuilders can buy their beams, plates, etc., as cheaply as the British shipbuilders, either in the United States or abroad—for they can import them free of duty—American ships cost before the War far more than British ships, because of the great difference between American and British wages. On this point

Mr. John M'Neil, late National President of the Brotherhood of Boilermakers and Shipbuilders of America, stated before the Committee on Merchant Marine and Fisheries of 1906:

I have served my time in Scotland, and have worked at the business there considerably. . . . In Scotland and England the present rate of wages is 6s. a day. That is the standard rate of wages. You, gentlemen, know what that is. It is \$1.50. That is the price paid at the present time at the Portsmouth Navy Yard, England. To-day, in this country, our mechanics in the Navy Yard here average \$3.20 per day, or more than 100 per cent. more than is paid in that country. The same conditions will govern in the private yards of private corporations. All the shipbuilding done in the Old Country, and a lot of it done here, is done on piecework. That includes all shipbuilders, skilled mechanics, riveters, fitters, caulkers, boilermakers. The large majority of the work is done on piecework. In Scotland the highest rate of wages at the present time for piecework in driving rivets is 9s. per hundred for three-quarter rivets, and 10s. 6d. for larger rivets. The price increases with the size of the rivets. In this country you are paying \$3.50 per hundred, whereas they are paying \$1.75. . . .

The rate of wages and conditions existing on the other side make it impossible for us people here to compete successfully with them in the market. The wages over there are low, exceedingly low; they are over 100 per cent. lower over there than here in a great many cases. . . . I hope not a gentlemen here would desire to see American labour put on the same level or in the same condition as in England. There is no accommodation for the working-man there. He is a working-man as long as he lives; but in this country it is different, and we want you, gentlemen, to keep it different, too. We do not want conditions like that to come into this country, and I hope no gentleman here will try to enact any legislation that will bring about conditions whereby we will be compelled to work for the same rate of wages or under the same conditions as they do in England.

In the words of the American Merchant Marine Commission: "The real dominant factor is not the price of materials, but the high wages of the skilled American workmen who fashion the plates and beams into the finished ship."

As wages in the shipbuilding trade were on an average about twice as high in the United States as in Great Britain, American ships were far more expensive than British ships. Now, the first cost of a ship is a matter of the greatest importance to shipowners. One must reckon 5 per cent. on the first cost of the ship for interest, 5 per cent. for depreciation, and 6 per cent. for insurance, or in all a charge of 16 per cent. per year. If, owing to the great difference in wages, an American ship costs 50 per cent. more to build than a British ship of equal size—that is an average difference—the American shipowner who competes with British trade is handicapped at the outset with a crippling charge of 8 per cent. per annum owing to the greater first cost of his ships alone. But in running his ships in free competition with the nations of the world the American shipowner had to reckon not only with this handicap of 8 per cent. per year, for American seamen's wages also were in many cases twice as high as are British seamen's wages. The American Merchant Marine Commission gave, for instance, the following example:

TOTAL WAGES PAID PER ANNUM.

<i>American s.s. "Acapulco," operating between San Francisco and Panama.</i>	<i>British s.s. "Palena," operating between San Francisco and Valparaiso.</i>
Gross tonnage, 2,572 tons. 66 men. Wages, \$36,720.00 per annum.	Gross tonnage, 2,553 tons. 86 men. Wages, \$18,430.32 per annum.

The American ship *Acapulco* paid twice the wages paid by the British ship *Palena*, although the British ship carried twenty more men.

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Before the War American ships had not only to pay far higher wages than British ships, but they had also to provide better food and accommodation. For instance, according to Par. 107 of the American Navigation Laws American seamen are entitled to no less than 1½ pounds of fresh meat per day when in port, and to 1½ pounds of salt meat, canned meat, and fish per day when not in port. Owing to the abundance of employment and the high rate of wages prevailing universally in America, cheap sailors were unobtainable in that country. Hence, free competition between English and American ships was out of the question. The inability of the United States to compete freely on the sea with Great Britain on neutral routes is most strikingly shown by the following figures:

TONNAGE OF SHIPPING PASSED THROUGH THE SUEZ CANAL DURING 1911.

	Vessels.	Tons Net.
United Kingdom	3,089	11,715,947
United States	2	1,690

In the trade through the Suez Canal English and American shipping stood in 1911 in the relation of 6,000 to 1. On the neutral sea routes American shipping disappeared. Had the United States not reserved the coasting trade to American shipping, and subsidised a few liners, there would have been no American Merchant Marine at all.

The Americans are an intensely patriotic people, and they think it is a disgrace to their country that their Merchant Marine, which used to rival that of Great Britain, has been practically wiped out; that almost her entire foreign trade was before the War carried in foreign bottoms, that the freight charges made by foreign ships for American exports were as a rule higher than the freight

charged by the same ships for European exports; that an American wishing to travel from New York to Rio Janeiro or Buenos Ayres in comfort had to cross the ocean twice, travelling via England; that, in case of war their fleet was dependent for its coal on foreign colliers. They felt all this as a national humiliation. Hence the citizens, regardless of class and occupation, called passionately for the re-creation of the American Merchant Marine. Important organisations for the promotion of the American Merchant Marine sprang up throughout the United States. Countless meetings of merchants, manufacturers, bankers and other business men demanded its re-creation for purely patriotic reasons. On January 26, 1910, the National Board of Trade resolved at its fortieth annual meeting at Washington:

That in our judgment the commercial interests of the country require prompt legislation, such as will result in the re-establishment of the American Merchant Marine.

That we ask of Congress not only the immediate establishment of American owned and managed mail and freight lines to our dependencies and the leading commercial countries of the world, but also a proper legislation which will enable our citizens to build, operate and maintain steamers and sailing-vessels on an equal footing with any other maritime Power.

I could quote hundreds of similar resolutions passed unanimously, not only by associations of business men but by farmers' granges as well.

That the re-creation of the American Merchant Marine is not a sectional or party matter, but a national question, will be seen by the examination of the party platforms and the party literature of the two great American parties. I have before me the Republican and Democratic Campaign Books of 1908 and 1910. In the Republican Campaign Book the re-creation of the Merchant Marine

is advocated on eleven closely printed pages. In the Democratic Campaign Book it is demanded on no less than thirty-one pages. The two great American parties are agreed as to the end, but they are not agreed as to the means. The Republican party has hitherto recommended subsidies sufficient to enable American ship-owners to compete with other nations on the ocean. The Democratic party has proposed a discriminating tariff in favour of goods imported in American ships by means of rebates on the import duties charged on the goods so imported. Ship-Subsidy Bills of various kinds have come every year before the American Congress.

The Atlantic trade of the United States was before the War carried on chiefly by Great Britain and Germany, whilst the Pacific trade of the United States was largely in the hands of the Japanese. The American shipping trade had fallen into the hands of Great Britain, Germany and Japan because wages in these three countries were far lower than in the United States. Now every good American is indignant that they should have lost their Merchant Marine through the free competition of "low-priced alien labour," and not unnaturally they wish to take from Great Britain and the other great maritime countries the trade which they have lost. How can this be done in view of the existing commercial treaties? The late Senator Elkins, in a speech delivered in the United States Senate on April 5, 1897, on discriminating duties, said:

When the United States wish to restore shipping and become independent on sea as on land, a treaty with England, covered with the dust of nearly a century, is brought forth, and we are solemnly told its sacred provisions must not be violated, and we must remain bound hand and foot, powerless to help ourselves, though what is proposed is right and proper, and would benefit our

interests. No treaty should stand in the way of our having what belongs to us as a matter of right, and having our fair share of the carrying trade of the world. Of course, no treaty should be violated as long as it is in force, but this Bill expressly proposes in terms to abrogate all treaties in conflict with the provisions of the Bill.

If that policy, which is frequently advocated, should be adopted, the danger of retaliation would, of course, arise. How will that danger be met? In a Report of 1910 (61st Congress, 2nd Session, Report 502, Part 2) on the American Merchant Marine, we read:

All the commercial nations of the world need what we have to sell. They cannot afford to impose unnecessary burdens upon their own people in their efforts to punish us for the exercise of the very right which they claim for themselves. In one respect at least we have the advantage of any other country. We produce the cotton which keeps their factories running, gives employment to their labour and clothes their millions. They cannot get it elsewhere, and there is no substitute. It is inconceivable that England, or Germany, or any other country which manufactures cotton cloth would put a burden upon our raw material, without which their machinery would stop and their people would suffer.

The United States very naturally desire to recover the shipping trade they have lost from those countries to which they have lost it. Owing to Great Britain's predominance on the seas, the American maritime policy is necessarily and inevitably anti-British, sympathy with Great Britain notwithstanding. Besides, the War has given to the United States both an extremely powerful shipbuilding industry and an enormous and rapidly growing Merchant Marine, which before long may, for all we know, exceed the British Merchant Marine in tonnage. It stands to reason that the Americans will strive to preserve the prosperity of these two great

industries after the conclusion of Peace. Great Britain must therefore reckon with the fact that the United States will become an exceedingly powerful competitor on the sea; that England may lose her old paramountcy in shipbuilding and shipping.

America's future as a shipbuilding country is particularly promising, because the United States are likely to apply to shipbuilding the same methods of high specialisation and of intensive production which have proved so extraordinarily successful in all their manufacturing industries. America will build ships of a standardised pattern in large numbers with the help of the most powerful machinery, and she will be well assisted by her workers, whose exceedingly high individual output will counterbalance, or perhaps more than counterbalance, the effect of higher American wages. Besides, she has a very great advantage in the possession of the most powerful iron industry in the world, and of an abundance of cheap coal. Exactly as in the old sailing-ship era, the United States may have a considerable advantage over Great Britain in consequence of the possession of a superabundance of relatively cheap raw materials which are used in shipbuilding. Last, but not least, the difference between British and American wages which previously existed and which was very great, should after the War be much smaller than it has been in the past. Possibly British and American wages will in future be approximately equal. It follows that England can preserve a great shipbuilding industry only by Americanising her shipbuilding methods, by producing ships on the largest and most scientific scale, and by insisting that labour will cease obstructing progress and restricting output. Otherwise she will not be able to compete in shipbuilding with the United States.

The wages of British and of other non-American

sailors also may, in the future, approximate the wages paid to sailors in the United States. It follows that Great Britain will have to look to her laurels not only as a shipbuilding country, but also as a shipping nation.

The War will undoubtedly cause the rise of a great shipbuilding and shipping industry in the United States. England must reckon with the fact that she is going to receive in the United States a great and possibly a redoubtable competitor on the sea. However, there is, of course, the possibility that America will establish her maritime greatness rather at the cost of Germany than at that of the United Kingdom and of the British Empire. After all, the greatness of a nation's shipbuilding industry and shipping trade should depend on the importance of its general industry and on the extent of its foreign trade. If production should continue increasing relatively slowly in Great Britain and the British Empire, and should continue rapidly expanding in the United States, it would be only natural that the United States would in course of time dominate the world, not only in general industrial production, but in shipbuilding and shipping as well. After all, inefficiency of production and supremacy in the shipping trade are not reconcilable.

The territory, the population and the natural resources of the British Empire are vastly greater than those of the United States. If the Imperial resources should be adequately exploited, the British people will become the foremost nation in the world in industry, wealth and power; and if it should temporarily lose its maritime supremacy to the United States owing to the War, it would ultimately regain it, because industrial supremacy and maritime supremacy are bound to go hand in hand.

CHAPTER X

THE ECONOMIC POSITION AND FUTURE OF FRANCE*

IT is of the greatest importance to the Allies that the Great War should lead to a complete and decisive victory, but it is equally important for them and for the world at large that at the end of the struggle a rejuvenated, a more powerful and a greater France should arise. I shall endeavour to show in the following pages, by means of the best and the most reliable information available, that the peace of the world and the future of human civilisation are bound up with, and are dependent upon, France's future greatness, and upon her increased power and prosperity.

The Germans have been a conquering nation, a nation of valiant and aggressive warriors, since the earliest ages, since the very beginning of their recorded history. German hordes, the Cimbri and Teutones, invaded the Roman Empire in the second century before Christ, in the time of Marius, and made Rome tremble. The Germans were defeated for a time, but later on, when Rome declined, they were bought off. At the end of the fourth century and the beginning of the fifth century after Christ the German Goths and Vandals ravaged the Eastern European provinces of the Roman Empire, plundering Athens, Corinth and many other towns. They overran Asia Minor, destroying Ephesus and other celebrated centres of civilisation. They swept westward

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and conquered Gaul and Spain. They turned to the south, invaded Italy, and in 410, under Alarich, stormed and plundered Rome and destroyed the Western Roman Empire. Their successors subjected Italy, France, part of Spain and vast territories in the East peopled by Slavs and Magyars. Charlemagne, the King of the Franks, conquered and ruled the countries from the Ebro to the Oder and the Danube on the one hand, and from the English Channel and the Bay of Biscay to the centre of Italy on the other hand. He was the most powerful monarch of his time. He was solemnly crowned Roman Emperor by the Pope in Rome in the year 800. He received significantly the double crown, the crown *urbis et orbis*. He became the protector of the Christian faith, of the Pope, of the Church Universal. He was given symbolically the key of the Holy Sepulchre of Jerusalem. He created "The Roman Empire of German Nationality," and adopted the title *Carolus serenissimus Augustus, a Deo coronatus magnus et pacificus imperator Romanorum gubernans imperium*. Charles the Great and his successors claimed to be the lawful heirs and successors of Cæsar and Augustus (Kaiser means Cæsar), the lords of the world. Incidentally, it should be observed that by destroying the Roman Empire and uprooting Roman civilisation the Germans plunged the world into the night of barbarism and savagery and put back the clock of civilisation by at least a thousand years.

The Germans are a very numerous, a very prolific and a very warlike race. German rulers, German statesmen, German thinkers and German patriots have during more than a thousand years hoped and fought for the reconstitution of a German Empire dominating the world, similar to the realms of Charlemagne and of Otto the Great. The Habsburgs tried in vain to obtain the dominion of the world. Their failure in the time of

Charles V. was due to France's determined opposition, without which they would probably have succeeded. The old Habsburg motto, *Austrice est imperare orbi universo*, which was first used by the Emperor Frederick III., may still be found on Habsburg palaces abbreviated to "A.E.I.O.U." The Prussian Hohenzollerns have made themselves German Emperors in the place of the Habsburgs. They consider themselves the heirs of the realms and of the world-embracing aims of Charles V., of Otto the Great, of Charlemagne, of Augustus and of Cæsar. They will certainly try to recreate the German universal monarchy of the past.

History teaches us that the character of nations is singularly stable and unchanging. The German people, the English people and the French people have faithfully preserved the national traits described to us by Tacitus, Cæsar and other historians two thousand years ago. Even if the present War should end in Germany's complete defeat, in the disappearance of the Hohenzollern dynasty in the disintegration of the German Empire, and in the establishment of a German Republic or several German Republics, the German nation may never forget its ancient power, pre-eminence and glory, and its successful resistance against a world in arms. The people may again become united and renew the struggle for world supremacy. Under other leaders the Germans may try once more to establish their paramountcy throughout the world, and they may, in the struggle, destroy modern civilisation as completely as they destroyed the civilisation of antiquity in the time of the Goths and the Vandals, the Franks and the Lombards. Such an event may seem improbable, but is by no means impossible. No cultured Roman would have believed that the German barbarians would destroy the Roman Empire and its civilisation,

Roman organisation and the Roman law, and that the Latin language would disappear. Therefore the interest, not only of democracy, which is merely a form of government and comparatively unimportant, but of human civilisation and of human liberty, which are all-important, requires the creation of conditions which will prevent another German attack upon the world. Such an attack can be prevented only if there is in Europe an efficient counterpoise to Germany.

The German race has been greatly favoured by Nature. It is numerically very strong, it is exceedingly prolific, it is very warlike, and it occupies a most excellent strategical position in the centre of the European Continent. Besides, the Germans can greatly add to their numbers by a successful policy of denationalisation and of Germanisation, especially among the racially related peoples around them. Lastly, the Germans control vast natural resources, especially coal and iron, which provide wealth and weapons for war. The Russian Empire, which was formerly considered to be the most powerful factor barring Germany's expansion and preventing her aggression, has broken down and has been dissolved into its component parts, into an anarchy, into a number of quarrelling fragments which may or may not become self-governing States. For all we know, Russia may never again be reunited. Germany, even if defeated, will certainly endeavour to strengthen her union with Austria-Hungary, and especially with the German parts of the Dual Monarchy which lie near her frontier. Besides, she will certainly endeavour to prevent a Russian reunion. She will play off one Russian State against the other, and will strive to convert large portions of Russia, and, if possible, all Russia, into a German colony or a German protectorate. We must therefore reckon with the

possibility that after the War, apart from a Greater Germany which includes Austria, the only Great Powers which will be left on the Continent of Europe may be France and Italy. Will these two Powers be strong enough to hold Germany in check with the help of the Anglo-Saxon nations, or will France and Italy also fall under German domination?

The strength of nations depends on the number of their inhabitants and on their intellectual, moral and material resources. The present struggle has shown the paramount importance of two factors in warfare—of man-power, which provides large armies, and of industrial strength, which furnishes the fighting millions with the weapons, munitions, transport and supplies they require. France has borne the brunt of the German attack. She is militarily stronger than Italy, and, as Russia has been eliminated as a military factor, it is of the greatest importance to the Allies and to the world that France should be able to hold Germany in check, should that country desire to embark upon another war; that France should be so strong as to deter Germany from renewing the struggle.

Military power is based upon man-power and upon industrial power. Let us consider each of these factors.

A comparison of man-power in the two countries shows that with regard to men France is vastly inferior to Germany. During the last hundred years, for which exact comparative statistics can be given, France's position with regard to Germany has grown more and more unfavourable, as may be seen from the following figures, which are based upon the French and German Censuses, and which have been extracted from the official statistical year books of the two countries:

Year.		<i>Germany within its Present Limits.</i>	<i>France (since 1871, without Alsace-Lorraine).</i>
1816	..	24,833,000	29,480,000
1830	..	29,520,000	32,370,000
1850	..	35,397,000	35,630,000
1870	..	40,818,000	38,440,000
1871	..	40,997,000	36,190,000
1881	..	45,421,000	37,590,000
1891	..	49,762,000	38,350,000
1901	..	56,874,000	38,980,000
1911	..	65,359,000	39,602,000

In 1816 France had about 4,500,000 more inhabitants than Germany. In 1911 Germany had nearly 26,000,000 more inhabitants than France. A line divides the table into two parts, one from 1816 to 1870 and one from 1871 to 1911. It will be noticed that the year 1870 is a very important date both for France and for Germany. Since that year the difference in the population of the two countries has suddenly and very greatly been accentuated. During the fifty-four years from 1816 to 1870 Germany's population increased by 16,000,000, but during the forty years from 1871 to 1911 it increased by 24,500,000, or at a greatly accelerated rate. During the fifty-four years from 1816 to 1870 France's population increased by 7,000,000, but during the forty years from 1871 to 1911 it increased by only 3,500,000, or at a very reduced rate. The Franco-German War of 1870-1871 was apparently eminently favourable to the increase of Germany's population and exceedingly unfavourable to that of the French population. The reason for this curious difference will be discussed later on.

Ever since 1816 the population of France has been increasing at a much slower rate than that of Germany

Examination of the yearly increment for all the years since the end of the Napoleonic War, which may be found in the *Annuaire Statisque de la France*, shows that the French population, which increased at a fairly rapid rate after the Peace of Paris, tends to increase more and more slowly as the years go by—that it is, in fact, approaching the point of stagnation and of decline. Up to 1867 yearly increases of from 100,000 to 200,000 were the rule. Of late such increases have become quite exceptional. Between 1878 and 1910 the surplus of births over deaths exceeded 100,000 only twice and very slightly. As a rule the excess of births over deaths per year was only about 60,000, whereas it was about 800,000 in Germany. In some years the French population did not increase at all, but actually declined, the number of deaths being greater than that of births. In 1890, for instance, France's population declined by 39,000, in 1891 by 11,000, in 1892 by 20,000, in 1895 by 18,000, in 1900 by 26,000, and in 1907 by 19,000. Although France has practically no emigration, but receives every year large numbers of immigrants from other countries, the population of the country tends towards stagnation, if not towards actual decline. In view of the fact that Germany's population is rapidly increasing, the stagnation of the French population seems very alarming. If the population of the two countries should increase at the same rate at which it has increased between 1871 and 1911, Germany should in 1951 have about 105,000,000 inhabitants and France only 43,000,000 inhabitants. There would then be twenty-five Germans to every ten Frenchmen. Many Germans who have compared the increase of the population in Germany and in France have confidently predicted that in half a century France will be a second- or third-rate Power, another Belgium—that the present is France's last war.

Many scientists, politicians and publicists who have studied the remarkable stagnation of the French population and the alarming reduction in the French birth-rate have ascribed the increasing barrenness of France to the Code Civil which provides for the equal division of property among children at the father's death, to the frequency of divorces, to the prevalence of alcoholism, and especially to the drinking of absinthe, to irreligiousness—in the deeply religious Finisterre the population increases comparatively rapidly—to the national egotism, to the Napoleonic Wars, to the general prosperity of the French, or to the decadence of the race. Racial decadence is most frequently given as the cause by France's enemies, especially by the Germans. The French race has certainly not grown sterile. That may be seen by the example of the French Canadians. In 1763, when Canada fell to England, 65,000 French people lived in the country. At the Census of 1910, 385,083 born French Canadians lived in the United States alone. If we add to these the French Canadians living in Canada and the French Canadians born from French-Canadian parents living in the United States, it appears that the 65,000 French of 1763 have increased so much that they number now between 2,000,000 and 3,000,000. The latter figure is that which was given to me in Canada. If, however, we estimate that there are only 2,500,000 French Canadians, it would appear that since 1763 the French in Canada have increased fortyfold. In 1763 there dwelt in France 21,769,163 French people. If their number had increased at a similar ratio there would now be in the world 800,000,000 Frenchmen. France would dominate the world. The Napoleonic Wars are scarcely responsible for France's low birth-rate, for Germany, Spain and other countries lost in them about as large a proportion of men as did France. Alcoholism, divorces, etc., prevail in

other countries as well. Consequently they cannot be held responsible.

The stagnation of France's population is certainly not due to egoism, to general prosperity and love of ease and comfort among the French, as is widely believed. The wealth of France is usually greatly over-estimated. The French are reputed to be exceedingly wealthy because they are extremely thrifty, and because they have, as a rule, a great deal of ready cash which they are willing to lend to foreign nations. They possess so much ready cash and lend it abroad because the French industries are stagnant and require little additional capital. The yearly surplus of income over expenditure in France is, after all, not very large. It is much smaller than it is in Germany and in the United States. In Germany and in the United States the rapidly expanding industries absorb the huge yearly surplus of income over expenditure. Hence both these States habitually borrowed money abroad, partly from France. Their abounding prosperity causes money to be scarce and dear. The decline of the French birth-rate is due, not to the prosperity of the people, which is largely a fiction, but, incredible as it may seem, to their poverty. In 1906 the birth-rate among the three great classes of the French people was as follows, per hundred families:

Among employers	295
Among salary-earners	199
Among wage-earners	284

It will be noticed that the birth-rate is greatest among the families of employers. The wage-earners come next, and the salary-earners, miserably paid officials, clerks, etc., have by far the smallest number of children. According to the French statistics, sterile marriages in 1906 stood in the following proportion:

Among employers	101
Among salary-earners	194
Among wage-earners	134

It will be noticed that sterility in marriage is by far smallest among employers and by far greatest among salary-earners, who earn a workman's wage or less, but have to keep up appearances at considerable cost. It seems probable that the stagnation of the French population is due, not to the causes which are usually given, but to the difficulty of making a living in France. I shall show in the following pages that prosperity, far from leading to a reduction in the birth-rate, leads to its rapid increase.

Although much has been written on the problem of population, it appears that the laws which regulate the birth-rate are insufficiently understood by the scientists and publicists of the present. Adam Smith wrote, with his usual shrewd common sense, in Book I., chapter viii., of *The Wealth of Nations*:

The demand for those who live by wages necessarily increases with the increase of the revenue and stock of every country and cannot possibly increase without it. . . . The most decisive mark of the prosperity of any country is the increase of the number of its inhabitants. . . .

The value of children is the greatest of all encouragements to marriage. We cannot, therefore, wonder that the people in North America should generally marry very young. Notwithstanding the great increase occasioned by such early marriages, there is a continual complaint of the scarcity of hands in North America. The demands for labourers, the funds destined for maintaining them, increase, it seems, still faster than they can find labourers to employ. . . .

The demand for men, like that for any other commodity, necessarily regulates the production of men; quickens it when it goes on too slowly and stops it when it advances.

too fast. . . . The liberal reward of labour, therefore, as it is the effect of increasing wealth, so it is the cause of increasing population.

Adam Smith's phrase, "The demand for men, like that for any other commodity, necessarily regulates the production of men; quickens it when it goes on too slowly, and stops it when it advances too fast," describes concisely and correctly the principal influence which determines the increase, stagnation or decline of population in States. As the number of animals depends mainly on the quantity of food available, and as they increase when food is abundant and diminish when it becomes scarce, even so the number of men depends on the quantity of work available, for earnings can be converted into food and shelter. It follows that population increases everywhere *pari passu* with the increase in the opportunities of making a living. In other words, national fertility depends principally on a very commonplace factor, on the natural resources of countries and their exploitation by man. Rapidly increasing labour-employing industries require a correspondingly rapid increase of workers. The vast demand for workers in America has caused the French Canadians to increase fortyfold in a century and a half, and has caused the population of the United States to grow from 3,929,214 in 1790 to 91,972,266 in 1910.

On the boundless and very thinly inhabited virgin soil plains of America population can grow rapidly merely by the expansion of agriculture. That is proved by the example of Canada, the United States, Argentina, etc. In the densely populated countries of Europe, on the other hand, where there are no prairies which can be converted into ploughed fields, the number of men who live by agriculture cannot increase very considerably, even if agricultural production increases, for with the help of

steam ploughs, drills, milking machinery, separators and other machines, an agricultural worker can now do as much work as was formerly done by several. How extraordinarily the development of the manufacturing industries may influence the increase of population may be seen from the following figures, which have been extracted from Porter's *Progress of the Nation* and the British and French Government Statistics:

	<i>Inhabitants of England and Wales.</i>		<i>Inhabitants of France.</i>
1600	.. .. 4,811,718	1600 ?
1700	.. .. 6,045,008	1700	.. .. 19,669,322*
1760	.. .. 6,479,730	1762	.. .. 21,769,163
1780	.. .. 7,814,827	1784	.. .. 24,800,000
1801	.. .. 8,872,980	1801	.. .. 27,500,000
1811	.. .. 10,163,676	1811	.. .. 29,350,000
1821	.. .. 11,978,875	1821	.. .. 30,450,000
1831	.. .. 13,894,574	1831	.. .. 32,570,000
1841	.. .. 16,011,757	1841	.. .. 34,230,000
1851	.. .. 17,914,768	1851	.. .. 35,800,000
1861	.. .. 20,060,925	1861	.. .. 37,390,000
1871	.. .. 22,704,108	1871	.. .. 36,190,000
1881	.. .. 25,974,439	1881	.. .. 37,590,000
1891	.. .. 29,001,018	1891	.. .. 38,350,000
1901	.. .. 32,527,843	1901	.. .. 38,980,000
1911	.. .. 36,070,492	1911	.. .. 39,528,000

Between 1700 and 1760, when England and Wales lived chiefly by a prosperous and rapidly expanding agriculture, the population of the country was practically stagnant. It increased by only 8 per cent. during the time. In the course of the next forty years, between 1760 and 1801, when the industrial revolution, the machine era, began, it grew by 37 per cent. Between 1600 and 1800 it increased by only about 80 per cent., or by 40 per cent. per century. On the other hand, since the beginning of the nineteenth century, since the time when Great Britain replaced hand labour by machine labour and became a manufacturing country, the population of

* Vauban's Estimate.

England and Wales has increased by more than 300 per cent. Since 1801 it has fully quadrupled, although during that period there was a very large emigration from England and Wales, and although British agriculture gave employment to greatly reduced numbers of workers, partly owing to the decline of agricultural production during the second half of the nineteenth century, partly owing to the introduction of labour-saving agricultural machinery. The rapid increase of the British population which previously had grown with extreme slowness, shows that the introduction of machinery increased not only the output of goods, but also that of men, in accordance with Adam Smith's dictum.

During the eighteenth century and the beginning of the nineteenth century, when both France and England were chiefly agricultural countries, the population of the two States progressed at almost the identical rate, as is shown by the figures given above. Nobody spoke then of the infertility of the decadence of the French race. Between 1700 and 1811 France had, as is shown by the reliable statistics given, about three times as many inhabitants as had England and Wales. Since 1811 a tremendous change has occurred. In 1911 the population of France was only 10 per cent. larger than that of England and Wales, and by 1921 England and Wales may have drawn level with France in respect of population. The economic factor has vastly accelerated the increase of population in the one country and has retarded that of the other country.

If we study analytically the British Census Returns for a long number of years, it appears that the colossal increase in the British population has taken place almost entirely in the towns; that the country population, exclusive of retired townsmen, suburban dwellers, etc., has remained stagnant; that but for the introduction

of the manufacturing industries France would still contain three times as many people as England and Wales. In 1801 Manchester and Salford, which now have more than 1,000,000 inhabitants, had only 94,876 people; Liverpool, with about 800,000 inhabitants had 82,295 people; Leeds, with 500,000 inhabitants, had 53,162 people; Sheffield, with 500,000 inhabitants, had 45,755 people, etc.

The slow increase of the French population and the rapid increase of the English and German population is due to the fact that France, though possessing a very flourishing agriculture, has comparatively unimportant and somewhat stationary industries, while England and Germany possess manufacturing industries which have enormously and very rapidly expanded. The gigantic growth of their manufacturing industries has enabled England and Germany to nourish vastly increased numbers, and has brought about the remarkable increase in population.

Let us now inquire why Germany's population has grown so vastly within recent times.

During the last few decades Germany's agricultural production has more than doubled, as the following figures show:

PRODUCTION OF—

<i>Year.</i>	<i>Rye.</i>	<i>Wheat.</i>	<i>Oats.</i>	<i>Potatoes.</i>	<i>Sugar.</i>
1880 ..	<i>Tons.</i> 4,952,525	<i>Tons.</i> 2,345,278	<i>Tons.</i> 4,228,128	<i>Tons.</i> 19,466,242	<i>Tons.</i> 415,000
1913 ..	12,222,394	4,655,956	9,713,965	54,121,146	2,632,282

Between 1880 and 1913—the latter was a particularly prolific year—not only the production of the great staple crops enumerated above, but that of meat also, has fully

doubled, owing to the application of science to industry. No similar progress has taken place in any other European country. It might therefore be expected that Germany's agricultural workers, and her rural population as well, should have greatly increased in numbers. As a matter of fact, both Germany's rural population and her rural workers have numerically declined, the vast increase of output notwithstanding. The colossal increase of the population which has taken place in Germany has been confined exclusively to the towns, and it has been particularly great in the large towns, in the important manufacturing centres. An analysis of the German Censuses yields the following illuminating and surprising picture:

<i>Year.</i>	<i>In Towns of 100,000 and More.</i>	<i>In Towns of 20,000 to 100,000.</i>	<i>In Towns from 5,000 to 20,000.</i>
1871	1,968,537	3,147,272	4,588,364
1880	3,273,144	4,027,085	5,671,325
1890	6,314,268	4,674,786	6,321,752
1900	9,120,280	7,111,447	7,585,495
1910	13,823,348	8,677,955.	9,172,333

<i>Year.</i>	<i>In Towns from 2,000 to 5,000.</i>	<i>In All Towns.</i>	<i>In Localities of Less than 2,000.</i>
1871	5,190,801	14,894,974	26,163,818
1880	5,784,976	18,720,530	26,513,531
1890	5,931,186	23,241,992	26,186,478
1900	6,815,853	30,633,075	25,734,103
1910	7,297,770	38,971,406	25,954,587

The rural population of Germany, the people who live in townlets and villages of 2,000 inhabitants and less,

were in 1910 actually less numerous than they were in 1871! During the same time the population of all towns of more than 2,000 inhabitants has grown from 14,894,974 to 38,971,406, or by 163 per cent. In the towns of from 2,000 to 5,000 people the population has increased by only 40 per cent., in the towns of from 5,000 to 20,000 inhabitants it has grown by 100 per cent., in the towns of from 20,000 to 100,000 it has increased by 175 percent., and in the towns of 100,000 inhabitants and more it has grown by no less than 610 per cent.

As general statements are not as illuminating as are concrete detailed examples, I would further illustrate the cause of the rapid growth of Germany's population. I would now give the record of the principal German towns, which will best enable us to visualise and to understand the causes of the marvellous increase of Germany's population and national wealth. The figures given are taken from the German Censuses:

<i>Year.</i>	<i>Berlin.</i>	<i>Hamburg.</i>	<i>Munich.</i>	<i>Leipzig.</i>	<i>Dresden.</i>
1875 ..	966,858	264,671	193,024	127,387	197,295
1880 ..	1,122,330	289,859	230,023	149,081	220,818
1890 ..	1,578,794	569,260	350,594	357,122	276,522
1900 ..	1,888,848	705,738	499,932	456,124	396,146
1910 ..	2,071,257	931,035	596,467	589,850	548,308

<i>Year.</i>	<i>Cologne.</i>	<i>Breslau.</i>	<i>Frankfurt.</i>	<i>Düsseldorf.</i>	<i>Nuremberg.</i>
1875 ..	135,371	239,050	103,136	80,695	91,018
1880 ..	144,772	272,912	136,819	95,458	99,519
1890 ..	281,681	335,186	179,985	144,642	142,590
1900 ..	372,529	422,709	288,989	213,711	261,081
1910 ..	516,527	512,105	414,576	358,728	333,142

<i>Year.</i>	<i>Charlot-tenburg.</i>	<i>Hanover.</i>	<i>Essen.</i>	<i>Chemnitz.</i>	<i>Stuttgari.</i>
1875 ..	25,847	106,677	54,790	78,209	107,273
1880 ..	30,483	122,843	56,944	95,123	117,303
1890 ..	76,859	174,455	78,706	138,954	139,817
1900 ..	189,305	235,649	118,862	206,913	176,699
1910 ..	305,978	302,375	294,653	287,807	286,218

<i>Year.</i>	<i>Magde-burg.</i>	<i>Bremen.</i>	<i>Königs-berg.</i>	<i>Stettin.</i>	<i>Duisburg.</i>
1875 ..	87,925	102,532	122,636	80,972	37,380
1880 ..	97,539	112,453	140,909	91,756	41,242
1890 ..	202,235	130,875	161,666	116,228	59,258
1900 ..	229,667	163,297	189,483	210,702	92,730
1910 ..	279,629	247,437	245,994	236,113	229,483

<i>Year.</i>	<i>Dortmund.</i>	<i>Kiel.</i>	<i>Mann-heim.</i>	<i>Altona.</i>	<i>Elberfeld.</i>
1875 ..	57,742	37,246	46,453	84,097	80,589
1880 ..	66,554	43,594	53,465	91,047	93,538
1890 ..	89,663	69,172	79,058	143,241	125,899
1900 ..	142,733	121,824	141,131	161,501	156,966
1910 ..	214,226	211,627	193,902	172,628	170,195

<i>Year.</i>	<i>Gelsen-kirchen.</i>	<i>Barmen.</i>	<i>Cassel.</i>	<i>Bochum.</i>	<i>Mülheim a.d. Ruhr.</i>
1875 ..	11,295	86,504	53,043	28,368	15,277
1880 ..	14,615	95,941	58,290	33,440	22,146
1890 ..	28,057	116,144	72,477	47,601	27,903
1900 ..	36,935	141,944	106,034	65,551	38,280
1910 ..	169,513	169,214	153,196	136,931	112,580

Beyond the thirty towns for which statistics are given, Germany has seventeen other towns of more than 100,000 inhabitants—viz., Aix-la-Chapelle, Augsburg, Schöneberg-

Berlin, Wilmersdorf-Berlin, Neukölln-Berlin, Brunswick, Crefeld, Dantzig, Erfurt, Halle, Hamborn, Mayence, Plauen, Posen, Saarbrücken, Strassburg, Wiesbaden. Altogether Germany possesses forty-seven towns of more than 100,000 inhabitants, or almost as many as the United Kingdom, while France has only fifteen.

A glance at the statistical table shows that all the German towns have grown with extraordinary rapidity; that the increase of population has been least great in the political centres and the residential and commercial towns, Berlin suburbs such as Charlottenburg excepted; and that it has been fastest in the manufacturing towns, and particularly in those which live by the exploitation of coal and iron. Since 1875 the population of Dortmund has grown fourfold, that of Düsseldorf four and a half-fold, that of Bochum fivefold, that of Essen five and a half-fold, that of Duisburg and of Kiel (shipbuilding) sixfold, that of Mülheim a.d. Ruhr sevenfold, that of Gelsenkirchen fifteenfold. Hamborn, between Duisburg and Essen, which was a village a few decades ago, had 32,597 inhabitants in 1900, 73,454 inhabitants in 1905, and 101,703 inhabitants in 1910. All the towns named are coal and iron centres, and all but Kiel lie close together in the Ruhr district.

The extraordinary effect of coal and iron, and especially of coal, upon population may be seen by the example of the Ruhr coal district. On and around that district, on territory which measures about forty miles by twenty, an area which is about as large as a small English county such as Nottinghamshire or Oxfordshire or Surrey, may be found eleven out of those forty-seven German towns of more than 100,000 inhabitants. These are Düsseldorf, Essen, Duisburg, Dortmund, Elberfeld, Gelsenkirchen, Barmen, Bochum, Mülheim a.d. Ruhr, Crefeld, Hamborn. In addition there are situated in the district named

fifty-five towns which have from 10,000 to 100,000 inhabitants, and a number of these are rapidly approaching the 100,000 limit. This narrow district, which resembles a gigantic town, is the greatest centre of population in Germany. It was inhabited in 1905 by 4,840,143 people and in 1910 by 5,818,237 people. Its population increased, therefore, by practically 1,000,000 within five years. The growth of the German towns is without a parallel in the world, except in the Western States of North America. Her coal and iron centres are Germany's colonies. Whereas in each of the years between 1905 and 1910 about 200,000 Englishmen left their homes and settled abroad, about as many Germans left their homes and settled in the celebrated Rhenish-Westphalian coal and iron district.

It appears that in the densely populated countries of Europe the increase of population is caused chiefly by the expansion of the manufacturing industries, that the population has grown rapidly in England and Germany owing to the mighty development of their manufactures, and that the French population has increased slowly, and tends now towards stagnation and decline, owing to the insufficient development of France's industrial power. Some believe that France's backwardness in manufacturing is due to the character of the French, to their lack of enterprise, lack of energy, inborn conservativeness, and to their protective tariff. As the German and American industries have grown mightily under rigid Protection, France's fiscal policy can obviously not be held responsible for her industrial backwardness. Nor can the character of the French be blamed. The French business men are hard-working, ambitious and enterprising, and they possess much originality and great inventive power. They have led the world in many branches of manufacturing, and particularly in those

which require the highest artistic, scientific and technical skill. In scientific agriculture, in the metallurgical industries, in the making of machinery of every kind, in engineering, in the electrical and chemical industries, in the making of the highest-class textiles, glass, porcelain, optical and surgical instruments, etc., the French have led the world. They certainly possess the energy, inventiveness, skill and ambition which are required for industrial success.

The economic progress of nations is caused partly by the qualities of their inhabitants, partly by geographical and geological factors. Germany's wonderful advance in agriculture and industry is chiefly due to Nature's bounty. Agriculture is carried on most successfully on level ground. North Germany is a gigantic plain. One can travel by rail from the Rhine to Berlin and thence to Hamburg or to Königsberg without passing through a single tunnel. Agricultural and industrial progress depends very largely on cheap transport. The North German plain is opened up by a wonderful system of vast but gentle rivers, which have a parallel course and which are easily navigable for hundreds of miles. Moreover, Germany's agriculture has benefited greatly by the fact that the country possesses a world monopoly in her gigantic deposits of soluble potash, which are invaluable for intensive agriculture. We can therefore not wonder that Germany's agricultural production has doubled since 1880, as has previously been shown. While Germany consists chiefly of a vast plain, and while she possesses conditions which are eminently favourable for agricultural production and for developing a system of cheap transport by rail and water, the advantage of which need scarcely be pointed out, France is chiefly mountainous, and her turbulent rivers, such as the mighty Rhone, make inland navigation extremely difficult and costly.

The increase of national population depends chiefly on the progress of the manufacturing industries, and the progress of these depends chiefly on the production of two commodities, of coal and of iron. Cheap iron is indispensable for producing cheaply all goods made of iron, and as long as coal continues to be the foundation of all manufacturing, no nation can hope to develop powerful iron industries and other industries unless it possesses an abundance of cheap coal. Contrary to general belief, coal is used chiefly, not for domestic, but for industrial purposes. This may be seen from the estimate of British coal consumption in 1903 made by the Royal Commission on Coal Supplies:

COAL CONSUMPTION IN THE UNITED KINGDOM.

	Tons.
Railways (all purposes)	13,000,000
Coasting steamers (bunkers)	2,000,000
Factories	53,000,000
Mines	18,000,000
Iron and steel industries	28,000,000
Other Metals and Minerals	1,000,000
Brickworks, potteries, glass works, chemical works	5,000,000
Gasworks	15,000,000
Domestic	32,000,000
Coal consumed in 1903—Grand Total ..	167,000,000

It will be noticed that only a very small portion of the coal used is employed for domestic purposes; that coal is used chiefly in factories, iron and steel works, chemical works, transport, etc.

The fact that the industrial progress of the great manufacturing nations is chiefly due to their wealth in coal may be seen at a glance from the following figures, which are taken from the Report on the Coal Resources of the World of 1913:

PRODUCTION OF COAL.

Year.	United States.	Germany.	United Kingdom.	France.
	Tons.	Tons.	Tons.	Tons.
1865 ..	24,700,000	28,330,000	99,760,000	11,840,000
1870 ..	29,950,000	34,880,000	112,240,000	13,330,000
1875 ..	48,200,000	48,530,000	135,490,000	16,950,000
1880 ..	56,830,000	59,120,000	149,380,000	19,360,000
1885 ..	112,180,000	73,670,000	161,960,000	19,510,000
1890 ..	141,620,000	89,290,000	184,590,000	26,080,000
1895 ..	177,590,000	103,960,000	193,350,000	28,240,000
1900 ..	243,410,000	149,790,000	228,770,000	33,400,000
1905 ..	351,120,000	173,660,000	239,890,000	36,050,000
1910 ..	445,810,000	221,980,000	264,500,000	38,570,000
1913 ..	504,520,000	273,650,000	287,410,000	40,190,000

Industrial progress determines population, and coal determines industrial progress. Coal is the mother of industry and of population. If England should be suddenly deprived of her coal, the population would starve and would rapidly dwindle. A glance at the figures given shows that the population and industrial strength of the four countries named have increased *pari passu* with their coal output. Where coal production has increased most rapidly, wealth and population have grown fastest. In 1865, when England produced far more coal than the United States, Germany and France combined, England's industrial supremacy seemed unchallengeable. Since then coal production in the United States and in Germany has advanced far more rapidly than in England, and with the slackening in the output of coal England's output of manhood has slackened as well. Coal is the mother of industry and of population. Coal production and birth-rate go hand in hand.

Coal production determines general production, and especially iron production, for the iron industries re-

quire vast quantities of coal. In the principal industrial countries the output of iron has increased as follows :

<i>Year.</i>	<i>United States.</i>	<i>Germany.</i>	<i>United Kingdom.</i>	<i>France.</i>
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1865 ..	845,000	975,000	4,896,000	1,290,000
1870 ..	1,691,000	1,391,000	6,060,000	1,173,000
1875 ..	2,056,000	2,029,000	6,432,000	1,416,000
1880 ..	3,896,000	2,729,000	7,802,000	1,733,000
1885 ..	4,111,000	3,687,000	7,369,000	1,630,000
1890 ..	9,353,000	4,658,000	8,033,000	1,962,000
1895 ..	9,597,000	5,465,000	7,827,000	2,005,000
1900 ..	14,101,000	8,521,000	9,052,000	2,699,000
1905 ..	23,360,000	10,988,000	9,746,000	3,077,000
1910 ..	27,740,000	14,793,000	10,380,000	4,001,000
1913 ..	30,966,000	19,292,000	10,260,000	5,311,000

During the period under consideration Germany and the United States, which in 1865 were quite unimportant as iron producers, have rapidly overtaken the United Kingdom in iron production; and France, which produced in 1865 more iron than the United States and Germany, produced before the War only one-fourth as much as Germany and one-sixth as much as the United States. The reason for the rapid progress in Germany and for the slow advance in France is obvious. While Germany is exceedingly rich in the most valuable minerals, particularly in coal, iron and potash, France is very poor in minerals, especially in coal. The most reliable coal statistics available are those which were put before the International Geological Congress of 1913. According to the Report on the Coal Resources of the World then published, the coal existing in Europe was estimated as follows:

	Tons.
In Germany	423,356,000,000
In United Kingdom	189,535,000,000
In Russia	60,106,000,000
In Austria-Hungary	59,269,000,000
In France	17,583,000,000
In Belgium	11,000,000,000
In Spain	8,768,000,000
In Spitzbergen	8,750,000,000
In Holland	4,402,000,000
In Balkan States	996,000,000
In Italy	243,000,000
In Sweden, Denmark, Portugal	184,000,000
Total	784,192,000,000

It will be noticed that Germany possesses about 55 per cent. of Europe's coal, that she has more than twice as much coal as all the other Continental States combined, that she has more than twice as much coal as the United Kingdom, and twenty-five times as much coal as France. We can therefore not wonder at France's industrial inferiority. Little Belgium alone is almost as rich in coal as is France. France suffers not only from a shortage of coal; the little coal she has can be worked only with difficulty. Unfortunately, she has a large number of small, and therefore uneconomic, coalfields, and the French coal strata are very thin, very irregular, and full of faults owing to disturbance of the ground. There are no less than fifty coal districts and twenty lignite districts in the country. Coal is worked in twenty-nine departments, but the bulk of the French coal, nearly three-fourths of her output, comes from her north-eastern territory, which is at present in German hands. Before the War French coal production was habitually greatly below France's needs. Owing to the shortage of coal and the difficulty of working the existing mines, coal was always scarce and dear in France. Industrial prosperity

cannot be based upon insufficient and very expensive coal. France's shortage of coal alone explains her industrial backwardness.

In iron ore also Germany occupies a very favoured position: The following table is drawn from the work, *Iron Ore Resources of the World*, which was placed before the International Geological Congress of 1910:

ASCERTAINED RESERVES OF METALLIC IRON.

	<i>Tons.</i>
In Germany and Luxemburg ..	1,360,000,000
In France	1,140,000,000
In Sweden	740,000,000
In United Kingdom	455,000,000
In Russia	387,200,000
In Spain	349,000,000
In Norway	124,000,000
In Austria-Hungary	103,500,000
In Greece	45,000,000
In Belgium	25,000,000
In Italy	3,300,000
Total	4,732,000,000

Germany has by far the largest iron deposits in Europe. France comes second. Her principal ironfield, that of Briey, the importance of which has only recently been discovered, lies close to the German frontier and has been seized by Germany. The important iron and coal mines of Belgium, of Poland, and of Western Russia also, are in Germany's hands. Germany intends to retain the coal and iron bearing frontier lands upon which she has seized. That has been announced by her statesmen, her Generals, and her business men. As Sweden has apparently fallen under Germany's control with regard to the supply of iron ore, it appears that Germany would absolutely dominate Europe in coal and iron should she be able to retain the frontier districts which she has

overrun. By retaining the district of Briey and the north-eastern departments of France, Germany could starve that country of coal. Being deprived of the necessary fuel, France's industries would languish and decline, and so would her population, for industry and population go hand in hand, and no industrial nation can continue to exist if suddenly deprived of its coal.

If we look at maps on which the coalfields are indicated we find invariably that the greatest centres of population occur on and around the great coalfields. Population is densest in the United Kingdom, in Belgium, in Germany, in France, in Russia, in Poland, in the United States, etc., on, and close to, the great coalfields. This is only natural. Industries require vast quantities of coal. For instance, three tons of coal are required to smelt a ton of iron. It is therefore cheaper to bring the industries to the coal than the coal to the industries. It is cheaper to carry iron ore, wool, cotton and other raw materials to the coalfields and to manufacture near the pit's mouth than to carry coal to the iron-mines for manufacturing iron, or to the harbour towns for making woollens, cotton goods, etc. Sheffield, Manchester, Glasgow, Pittsburg, Essen, etc., owe their rise to the vicinity of the coalfields. If Germany should be allowed to retain her conquests she would not only subject herself millions of non-Germans, but she would absolutely dominate Europe with the coal and iron monopoly which the War would have given her, and she would thus be able to embark upon the final conquest of the world. Moreover, her vast mineral resources would allow her to double and treble her population, while France, deprived of the bulk of her mineral resources, would decline in wealth, power and population. She would cease to count as an industrial country, while Germany would become far more densely peopled than the United Kingdom and Belgium.

The progress of population depends on the progress of the labour-employing industries, and the progress of these depends chiefly on the possession of the indispensable raw materials. However, there is another important factor which influences the birth-rate. A victorious war is apt to promote industrial development and to increase population, while a disastrous war is apt to influence both industry and population most unfavourably. After 1871 population in Germany increased far more quickly than it had done previously, but France's population increased far more slowly. Obviously the war stimulated the increase in population of one country and restricted it in the other. Germany's industries expanded rapidly owing to the confidence which the victory had inspired, owing to the receipt of the French war indemnity of £200,000,000. The war had cost Germany only £50,000,000. She had realised a vast territorial and financial profit and had invested it in the business. France, on the other hand, had been greatly impoverished by the war. Her losses may be estimated at at least £1,000,000,000, a colossal sum at the time. Moreover, France's taxation was enormously increased by the war, which had scarcely affected taxation in Germany. Germany deprived France in 1871 not merely of two provinces with 1,500,000 people and vast mineral resources, but of millions of prospective citizens who would have been born of French parents had not the hard times following the war compelled them to restrict the birth-rate. The limitation of families became so serious in France after 1871 owing to her defeat as well as owing to the insufficiency of her coal.

The future of France evidently depends on the result of the War. If Germany should be able to retain the vast coal and iron resources of North-Eastern France,

Belgium, Luxemburg and Alsace-Lorraine, her population would grow at an unprecedented rate, while that of France would not merely remain stationary, but would rapidly decline. Lack of natural resources is bound to tell. In a few decades France would, indeed, cease to be a Great Power, she would become a minor State at the mercy of Germany, a German dependency.

It is in the interests of Europe and of the world that France should remain great, strong and prosperous; that her population should again increase so as to enable her to hold her own against Germany. France can be aggrandised only if her territories are increased, and if she possesses or controls those resources by the exploitation of which men live, thrive and multiply. The Allies have announced that, in re-drawing the map of Europe, they will be guided by the principle of nationalities, by the right of the people to govern themselves. The facts given in these pages show that, although the racial factor is very important, the economic factor is no less weighty. Policy, though striving after the ideal, should not overlook and neglect the practical, the necessary and the obvious. It is clear that nations cannot hope to survive if their opponents possess vastly superior natural resources which secure to them an overwhelming and a constantly growing preponderance in manpower and in industrial power, in soldiers and in arms, in power and in wealth. Not only the political frontiers of the world, but the economic frontiers too, may have to be rectified if the future peace is to be a lasting one. The peace of the world and the future of human civilisation are dependent on France's future greatness and upon her increased power and prosperity. The population of France can be increased only if the country acquires, in consequence of the War, adequate natural resources, the exploitation of which allows men to thrive and to

multiply. A France with a stationary or a retrogressive population is bound to become Germany's vassal within a few decades. Germany might more easily defeat France in peace than in war. France can remain great and strong only if she obtains those material securities which she urgently requires.

CHAPTER XI

THE PROBLEM OF ALSACE-LORRAINE *

AT present Germany absolutely dominates the Continent of Europe owing to her vast preponderance in population, in natural resources of every kind, especially minerals, and in the manufacturing industries, and therefore in soldiers, arms, munitions of war and wealth. France is the second strongest Power on the Continent, but she is greatly inferior to Germany in population, minerals and the manufacturing industries, and therefore in armed strength and wealth as well. It is obviously in the interest of Europe and of the world that France should be so strong as to be able to act as an efficient counterpoise to Germany; that she should be so strong as to be able to prevent that country embarking once more upon a great war of conquest. It follows that at the Peace an attempt should be made to redress the balance, to strengthen France to such an extent that she will be able to resist a German attack with hope of success.

France is at present too weak in men, material, resources and wealth, if compared with Germany. She requires strengthening, and she can be strengthened most easily either by joining to her in some form or other populous territories near her frontier or by placing at her disposal an adequacy of those natural resources, especially coal, which she lacks, and by the exploitation of which men multiply and nations acquire increased power, or by

* From the *Fortnightly Review*, March, 1918.

carrying out both these measures at the same time. The defensive strength of France could obviously most easily be increased by the return of Alsace-Lorraine, which was torn from her side in 1871. In addition, France and Belgium might conclude a strict alliance for mutual defence.

Before the War Germany had 67,000,000 inhabitants, France, had 40,000,000 inhabitants, Belgium had a population of 8,000,000, and Alsace-Lorraine a population of 2,000,000. If Germany should lose only Alsace-Lorraine to France, her population would be reduced from 67,000,000 to 65,000,000, and that of France would be increased from 40,000,000 to 42,000,000, while France and Belgium combined would have a population of 50,000,000. Germany would still continue to be vastly superior to France in men, and particularly in mineral and industrial resources. The abundance of Germany's natural wealth, and especially her vast riches in coal, would enable the German population to increase at a very rapid rate, while the lack of natural resources, particularly of coal, would cause France's population to remain stationary. Before long Germany's preponderance over France in man-power, industrial power, wealth and armed strength would be absolutely overwhelming. It follows that the retrocession of Alsace-Lorraine and a Franco-Belgian alliance would not suffice to re-establish the balance between France and Germany. At best it would prove a very ineffective half-measure.

The Allied statesmen have formally and solemnly recognised France's title to Alsace-Lorraine. On the other hand, the Germans and their friends have informed us that Alsace-Lorraine was originally part of Germany; that it was unjustly torn from Germany in the time of Louis XIV.; that the vast majority of the inhabitants of the country are Germans by race and by language;

that they are happy and prosperous; that they have no wish to become once more subjects of France; that a *plébiscite* would establish the fact that they desire to remain Germans. Let us consider the arguments in favour of Germany retaining Alsace-Lorraine by means of the official German statistics, to which not even the most patriotic German can take exception. The figures used in this article have been taken from the *Statistisches Jahrbuch für Elsass-Lothringen*. The issue of 1913 has been used, and the pages have been indicated in every case so as to facilitate reference and control of the statements made.

Alsace-Lorraine was not "torn from Germany in the time of Louis XIV.," as is frequently stated, but was willingly ceded by Germany to France in 1648 at the Peace of Westphalia, which ended the Thirty Years' War. The fact that Germany attached little value to the possession of Alsace-Lorraine at the time, and that that country was ceded willingly, if not gladly, may be seen from the sixth edition of Meyer's *Konversations Lexikon*, the leading German encyclopædia. We read under the heading "Elsass-Lothringen" in vol. v., p. 733:

How little the Imperial House of Habsburg was willing to preserve the frontier-land for Germany was shown by the treaty of March 20th, 1617, by which it ceded to Spain its rights to Alsace. In the course of the Thirty Years' War (which began in 1618) Duke Bernhardt of Weimar tried to found a principality for himself in Alsace. However, he tried to do this with the help of French support and of French money. When he died, in 1639, Alsace fell into the hands of the French, and at the Peace of Westphalia of 1648 the Emperor ceded to France all his rights to Alsace. Thus France took the place of Spain. It is true the rights of the Imperial Estates were recognised in particular because the Emperor had waived his rights in his capacity as Overlord of the Empire, not on behalf of the Empire.

The stipulations whereby this transference of territory and of rights was made were vaguely worded for the purpose of sparing Germany's susceptibilities and of facilitating the conclusion of the peace. That is acknowledged by most impartial historians. Louis XIV. did not rob Germany of Alsace-Lorraine, but made use in his own time of the stipulations of the Treaty of Westphalia by abolishing the purely nominal independence which had been left to the Alsatian Statelets. The inhabitants of the two provinces were happy to become Frenchmen, and they became most loyal and devoted subjects of France, because that country pursued a wise policy of justice and of generous toleration towards them, which contrasts most favourably with the rule of petty persecution and oppression which Germany initiated in 1870. Ever since the people of Alsace-Lorraine have fought enthusiastically and determinedly for France. On the Arc de Triomphe in Paris, on which the names of those Generals were inscribed who distinguished themselves in fighting for revolutionary and Napoleonic France, the following twenty-eight names of Alsatian Generals are engraved:

Schérer (the Minister of War), Wehrlé, Beurmann, Wolf, Castex, Kellermann (who, at Valmy, defeated the Prussians, saved France, and became Duc de Valmy and Marshal of France), Strolz, Kléber (who succeeded Napoleon as Commander in Egypt), Schauenbourg, Becker, Stengel, Amey, Kellermann Fils, Lefebvre (Duc de Dantzig and Marshal of France), Hatry, Boyer, Dorsner, Schramm, Schneider, De Berckheim, Chouard, Schaal, Bourcier, Rapp (Napoleon's Aide-de-Camp), Walther, Schramm Fils, De Coehorn, Dahlmann.

In addition, thirty-four other Alsatian Generals served under Napoleon. In this War also numerous distinguished Alsatian officers have been fighting on the side of France, but scarcely any on that of Germany.

The present War is largely fought in defence of the principle of nationalities, in defence of the principle that nations are entitled to be free, that they have the right to dispose of themselves and to govern themselves. Therefore, we need not attach over-great importance to the learned arguments advanced by professors of history, who dispute the provisions of the Treaty of Westphalia, or to the learned, but very contradictory, opinions of ethnologists, archæologists, philologists and anthropologists who establish racial and national claims by measuring skulls, dissecting language roots, etc. Men choose their allegiance, not for anthropological, philological, or historical reasons, but for more human and more commonplace motives. As a rule, they are willing to live under a Government which treats them justly and fairly, but they are unwilling to submit to harshness, exploitation and gross and palpable injustice. Men of the same race consider themselves, to some extent, as brothers. Hence, governmental injustice becomes particularly irksome, exasperating and unbearable if it is exercised by men of a different race.

At first sight the contention that the inhabitants of Alsace-Lorraine are men of German race and that they are satisfied would seem to be perfectly correct. The Statistical Year-Book for Alsace-Lorraine provides us, on p. 22, with the following language statistics:

MOTHER-TONGUE OF INHABITANTS OF ALSACE-LORRAINE.

		<i>In 1900.</i>	<i>In 1910.</i>
Inhabitants of German language	..	1,492,323	1,634,260
„ „ French language	..	199,433	204,262
„ „ various languages	..	27,714	35,492
Total ..	..	1,719,470	1,874,014

In 1910, at the time of the Census, only 204,262 of the inhabitants of Alsace-Lorraine, or less than one-ninth,

had the French mother-tongue, and only 99,612 people, or one-nineteenth of the inhabitants, spoke French and did not know German. The great majority of the Alsatians and Lorrainers are of German descent and language. That is shown not only by the statistics quoted, but by the general prevalence of German personal names as well. The list of Alsatian officers inscribed on the Arc de Triomphe, previously given, contains scarcely any except German names.

The satisfaction or dissatisfaction of conquered people can usually be measured with mathematical certainty by their movements. Satisfied annexed populations increase, but dissatisfied ones diminish through the decline of the birth-rate, and especially through emigration. Since its incorporation in Germany the population of Alsace-Lorraine has, according to the Alsatian Statistical Abstract, p. 1, changed as follows:

<i>Year.</i>		<i>Year.</i>			
1871	1,549,738	1895	.. ..	1,640,986
1875	1,531,804	1900	.. ..	1,719,470
1880	1,566,670	1905	.. ..	1,814,564
1885	1,564,355	1910	.. ..	1,874,014
1890	1,603,506			

The population of Alsace-Lorraine has considerably increased between 1871 and 1910. It has grown during that period by 324,276, or by little more than 20 per cent., while during the same period the population of France has increased only from 36,190,000 to 39,528,000, or by a little less than 10 per cent. Only during two Census periods the population of the two provinces decreased. The substantial increase of the Alsatian population and its small diminution during only two Census periods would seem to indicate that the conquered peoples are indeed as satisfied with their new masters as the Germans contend. However, if we turn to the

German compiled and German published official statistical abstract of Alsace-Lorraine and analyse the figures contained in it, we shall see a picture which differs very widely from that which is provided by the Censuses. In 1871 Alsace-Lorraine had 1,549,738 inhabitants. If there had been no emigration from that country it should have had in 1910, not 1,874,014 inhabitants but 2,476,544 inhabitants, owing to the yearly excess of births over deaths, and owing to immigration from Germany and other countries. This is borne out by the following figures:

Population of Alsace-Lorraine in 1871 (page 1) ..	1,549,738
*Excess of births over deaths, 1872-1911 (page 29)	554,984
Germans and foreigners at Census of 1910 (page 17)	371,822
Total	2,476,544

As the population of the provinces was in 1910 only 1,874,014, it appears that no fewer than 602,530 people have been lost to Alsace-Lorraine by emigration between 1871 and 1910. That is exactly 40 per cent. of the original number of inhabitants. Emigration from Alsace-Lorraine has been caused, not by economic pressure, but by political dissatisfaction, and it has been on an unprecedented scale. It beats all established records. Very likely this gigantic figure of emigration seriously understates the actual fact, for many of the children of immigrant Germans and foreigners who were born in Alsace-Lorraine—they should number at least 100,000—are, of course, described in the Census as native Alsatians and Lorrainers. It follows that, probably, at least 700,000 have left their homes.

The revelations of the statistical abstract are so startling that it seems necessary to test the correctness of the

* As the figures for 1871 are not available, those for 1911 have been used instead.

foregoing figures by calculating the loss caused by emigration in a different way. Page 48 of the Year-Book contains a table which gives the loss or gain which the civil population of Alsace-Lorraine has experienced during every one of the Census periods. It supplies us with the following extraordinary picture:

NET GAIN OR LOSS THROUGH MIGRATION.

<i>Year.</i>		<i>Male.</i>	<i>Female.</i>	<i>Total.</i>
1871-1875 ..	..	- 44,490	- 26,471	- 70,970
1875-1880 ..	..	- 15,230	- 20,605	- 35,835
1880-1885 ..	..	- 31,792	- 27,520	- 59,312
1885-1890 ..	..	- 18,915	- 19,076	- 37,991
1890-1895 ..	..	- 18,125	- 16,409	- 34,534
1895-1900 ..	..	+ 5,677	- 8,333	- 2,656
1900-1905 ..	..	+ 6,767	- 2,813	+ 3,954
1905-1910 ..	..	- 16,544	- 13,751	- 30,295
Total ..		- 132,661	- 134,978	- 267,639

The tremendous and unceasing outflow of population which has occurred during all Census periods except a single one is particularly striking if we remember that there has been an enormous immigration into Alsace-Lorraine both from Germany and other countries, and that the present table gives only the excess of emigration over immigration, but by no means the total emigration.

It is usually believed that only young men have left Alsace-Lorraine in order to escape compulsory service in the German Army. The official statistics show that the number of women who, on balance, have emigrated from that country has been even greater than that of the men. The figures given show that, on balance, Alsace-Lorraine has lost between 1870 and 1910, 267,639 people by emigration. However, if we wish to find out how many Alsace-Lorrainers have actually left their country we must,

of course, add to the figures given the Germans and foreigners who were enumerated in those provinces at the Census of 1910. Such a calculation yields the following result:

Excess of emigration of civil population over im-						
migration, 1879-1910 (page 48)						267,639
Germans and foreigners in Alsace-Lorraine in 1910						
(page 17)						371,882

Total

639,521

This calculation and the previous one yield very similar results. The difference of 36,991 between the two is no doubt due to errors of detail which are inseparable from population statistics. If we add to this figure the children of immigrant Germans and foreigners, probably at least 100,000, who are officially described as Native Alsatians, we arrive at the full loss of population which the two provinces have suffered since 1871. French authorities habitually state that Alsace-Lorraine has lost through emigration 500,000 inhabitants. The figure usually given is not very convincing on account of its roundness. From the official German statistics it appears that, not allowing for the children of immigrant Germans and of foreigners who are described as Native Alsatians and Lorrainers, the two provinces have lost by emigration either 602,530 or 639,521 people, of whom about one half were women. That is the most damning evidence as to the effect of Germany's rule.

It will be noticed that I assume that all the Germans and foreigners dwelling in Alsace-Lorraine have migrated into the country since its annexation. During the turmoil of war there were probably few Germans and other foreigners in the country. Besides, against the number of Germans and foreigners who were in Alsace-Lorraine in 1871 may be set part of the children of Germans and

foreigners born in Alsace-Lorraine who are now classed as Alsatians and Lorrainers.

In 1910 there were in Alsace-Lorraine 371,822 Germans and foreigners. Of these, 295,436 were Germans and 76,386 were foreigners. Let us now consider the composition of this immigrant population.

The 295,436 Germans can be classified as follows:

Male civilians .. 108,444	Citizens of Prussia 174,468
Females .. 111,494	„ „ Bavaria 42,013
Soldiers from Germany .. 75,498	„ „ Baden .. 39,495
	„ „ the other States 39,460
Total .. 295,436	Total .. 295,436

It will be noticed that the Prussian element is by far the strongest in Alsace-Lorraine. We can therefore not wonder that the country is not being Germanised, but Prussianised.

Let us now inquire into the occupations of the Alsatian natives and the immigrant population. According to data furnished by the German Census of Production of 1907, which may be found on page 25 of the Alsatian Statistical Year-Book, the people gainfully occupied in Alsace-Lorraine were classed as follows:

	Born Alsatians.	Germans and Foreigners.
In agriculture	327,482	11,684
In industry	270,814	79,495
In commerce and trade ..	73,111	24,433
In domestic service	7,630	2,653
In the army	6,291	68,257
In the Civil Service and the professions	22,905	11,930

The vast majority of the immigrant Germans and foreigners are engaged in the most profitable occupations

in industry and commerce. The proportion of immigrants to natives is particularly great in the Civil Service and in the learned professions, which are almost monopolised by Germans. On the other hand, the proportion of immigrants is quite insignificant in agriculture, which has been allowed to remain a native monopoly. While Germans, and particularly Prussians, have occupied all the best administrative positions and have crowded into all the well-paid occupations, the natives have become hewers of wood and drawers of water. The hundreds of thousands of Alsatians who have left their country since 1871 have been replaced by Germans from Germany and by foreigners, especially by Italians and Poles. In this way the country has to some extent been denationalised. However, it should not be thought that the 600,000 inhabitants of Alsace-Lorraine who have emigrated have abandoned their native soil impelled by the spirit of adventure—that they have gone to oversea countries. Between 1902 and 1911, for which years alone there are official figures on page 49 of the Statistical Abstract, oversea emigration from the conquered provinces came only to about 500 per year. The vast majority of the emigrants have left Alsace-Lorraine for France. They have thus shown where their sympathies lie.

A certain number of Alsatians have gone to Germany. In 1907, at the time of the Industrial Census (see page 26 of the Year-Book), 71,248 people born in the two provinces dwelt in Germany. Of these, 11,884 were soldiers, officials, etc. Of the remaining 59,364, the great majority were agricultural and industrial labourers and their families. In this connection it should be mentioned that the German Government distrusts Alsace-Lorraine to such an extent that the two provinces are garrisoned almost exclusively by German troops,

while the majority of the Alsatian recruits are distributed all over Germany. In 1910 the garrison of Alsace-Lorraine was composed of 75,498 Germans and only 6,778 natives of the country.

According to the Census of Production, the vast majority of the immigrant Germans and foreigners have, as has previously been shown, gone into trade, industry, the Civil Service, the learned professions, etc. The new-comers have filled the towns, and have abandoned the countryside to the original inhabitants. The following table, compiled from page 296 of the official Year-Book, shows the composition of the population of some representative towns:

	<i>Alsace-Lorrainers.</i>	<i>Germans.</i>	<i>Foreigners.</i>
Strassburg	113,471	60,774	4,646
Mulhouse	72,584	16,808	5,649
Metz	29,136	35,762	3,700
Colmar	34,480	8,219	1,109
Algringen	1,556	6,644	1,276
Deutschoth	1,386	1,510	3,397
Diedenhofen	6,038	6,799	1,347
Dieuze	2,450	3,273	129
Grossmoyeuvre	3,478	3,146	2,931
Hayingen	5,064	3,172	3,246
Kleinrosseln	2,458	1,329	1,825
Mörchingen	1,632	5,247	87
Montigny	5,152	8,288	577
Nilvingen	2,383	1,842	1,570
Sablon	4,656	5,477	587
St. Avold	2,399	3,884	117

It will be observed that the number of Germans and of foreigners is greatest in the large towns, and that the proportion of Germans and foreigners is heaviest in those numerous small manufacturing and mining towns which have recently sprung up. In Metz, with its large garrison, there are more Germans than natives. In the iron and

coal centres, such as Algringen, Diedenhofen, Mörchingen, Montigny and others, there are also more Germans than natives. In some of these towns there are three or four Germans to every single native. In others the foreigners are as numerous as the natives. In Deutschoth there were three times as many foreigners as Alsace-Lorrainers. On many points the natives of Alsace-Lorraine are thus being crowded out.

The Germans pride themselves on having awakened and developed the sleepy towns of Alsace-Lorraine. Some, especially the commercial and industrial districts, have indeed grown rapidly in population since 1871, but others have declined, as the following table (page 292 of the official Abstract) shows:

			1871.	1910.
Strassburg	..	..	85,654	178,891
Metz	..	..	53,623	68,598
Mulhouse	..	..	52,892	95,041
District of Molsheim	..	..	74,910	67,069
,,	Schlettstadt	..	78,162	67,581
,,	Weissenburg	..	62,333	56,579
,,	Rappoltsweiler	..	67,102	58,151
,,	Château-Salins	..	52,801	45,303
Commune of Algringen	..		367	9,476
,,	Nilvingen	..	273	5,795
,,	Sablon	..	1,039	10,720
,,	Deutschoth	..	1,050	6,293
,,	Kneuttingen	..	937	5,612

While between 1871 and 1910 the population of Strassburg, Metz, Mulhouse, and of the mining towns at the bottom of the table, has increased considerably, that of the districts of Molsheim, Schlettstadt, etc., has substantially decreased.

The towns of Alsace-Lorraine have prospered during the German occupation, but it is a serious error to believe

that they had been stagnant before 1871. That may be seen from the following figures, which are taken from page 292 of the official Year-Book:

POPULATION OF—

<i>Year.</i>	<i>Strassburg.</i>	<i>Mulhouse.</i>	<i>Metz.</i>	<i>Colmar.</i>	<i>Gebweiler.</i>	<i>Hagenau.</i>	<i>Märkisch.</i>
1800	48,470	6,628	34,401	13,396	2,802	7,009	6,364
1871	85,654	52,892	53,623	23,311	11,350	11,388	12,322
1910	178,891	95,041	68,598	43,808	13,024	18,868	11,778

Under the French Government the whole country, and particularly the textile centres, such as Mulhouse and Gebweiler, were developed. Under Germany's domination the textile industries, deprived of the French market, began to languish. On the other hand, of recent years the iron and steel industries have mightily developed, because two Englishmen, Sidney G. Thomas and Percy C. Gilchrist, discovered in 1878 a way of treating the vast deposits of phosphoric iron ores of Alsace-Lorraine. Hence we find that the population of certain communes, such as Algringen, Nilvingen, etc., has grown tenfold, twentyfold and more.

The Germans have endeavoured to Germanise Alsace-Lorraine by means of the schools. Compulsory education has been rigidly enforced. In accordance with traditional Prussian policy, the new rulers of Alsace-Lorraine have vastly improved the intermediate and University education as well. They have opened libraries, museums and other learned institutions, and, having deliberately destroyed the celebrated Strassburg Library, with its irreplaceable manuscripts and other treasures, by bombardment, have created a huge new library in its stead. The progress of University and intermediate

education in Alsace-Lorraine under German rule may be seen from the following figures, which have been extracted from the official Year-Book, pages 228 to 235:

Year.	STRASBURG UNIVERSITY.			Volumes in Library.	Intermediate School Attendance.
	Alsatian Students.	Other Students.	Teachers.		
1872 ..	69	143	47	220,000	2,403
1882 ..	200	588	104	542,865	7,096
1892 ..	410	559	121	715,215	8,668
1902 ..	619	514	144	878,933	9,394
1912 ..	1,142	996	178	1,002,550	12,235

The intermediate schools and the Universities have been managed with the greatest efficiency. The German Government has sent to Strassburg some of its ablest scientists, teachers and administrators, and the result has been a steady and exceedingly rapid progress in the attendance of students and scholars. The fact that nearly half of the students at Strassburg are non-Alsatians testifies to the excellence of that institution. The Government has been lavish in giving grants in aid to the University, the library and other institutions, which have been palatially housed.

Germany has not only improved education in Alsace-Lorraine, but all the public services as well. The railway mileage of the two provinces has been increased from 768 kilometres in 1871 to 1,919 kilometres in 1910, at an expenditure of Mk.545,830,772. The Alsatian roads and waterways have been vastly improved, and so have been the police, sanitation, the administration of the law, general administration, etc. Even those Alsatians who are irreconcilably hostile to Germany recognise

the efficiency of the German Government and the excellence of the work done. However, the efficiency and the excellence of the German institutions do not reconcile the native population to the high-handed, over-bearing and unsympathetic attitude of their new masters.

Alsace-Lorraine has undoubtedly prospered under German rule. Its progress in wealth and population is due chiefly to the exploitation of the vast mineral resources in the two provinces, and especially to the utilisation of the phosphoric iron ores. The development and the future possibilities of the mineral industry of the two provinces may be gauged from the following table, which is taken from page 90 of the Statistical Year-Book:

PRODUCTION IN TONS.

<i>Year.</i>	<i>Black Coal.</i>	<i>Petro- leum.</i>	<i>Iron Ore.</i>	<i>Potash.</i>	<i>Iron.</i>
1872 ..	290,206	4,093	684,600	—	222,070
1882 ..	581,525	2,169	1,359,141	—	359,117
1892 ..	692,510	12,942	3,571,426	—	733,768
1902 ..	1,309,818	20,205	8,793,496	(1910) 64,822	1,630,220
1911 ..	3,033,436	43,748	17,754,571	97,142	2,908,230

Between 1872 and 1911 the production of coal and of petroleum in Alsace-Lorraine has increased tenfold and that of iron ore twenty-five-fold, while the production of manufactured iron has grown thirteenfold. Vast deposits of soluble potash of infinite value have only lately been discovered. The production of the potash-mines has trebled in a single year.

Germany has by far the largest iron industry in Europe. In 1913 she produced twice as much iron as the United Kingdom and five times as much as France. Germany's prosperity is based on the possession of an abundance

of coal and of iron ore. The bulk of the iron ore employed in Germany comes from Alsace-Lorraine. In the *Gemeinfassliche Darstellung des Eisenhüttenwesens*, a handbook published by the Association of German Iron Producers, we read:

The opening of the Minette ore déposits in Luxemburg, Lorraine, and the neighbouring districts of France and Belgium caused in these territories and the districts adjoining them a wonderful advance of the iron industry. The production of iron ore in Lorraine and Luxemburg has, within a very short time, overtaken the iron ore production of all other districts of Germany combined. The iron ore production of Lorraine and Luxemburg amounted in 1910 nearly to 80 per cent. of the whole of the German iron output. The future of the German iron ore industry depends on these deposits.

According to Kohlmann's estimate, the iron ore in German Lorraine should approximately amount to 1,800,000,000 tons. At the present rate of production it should suffice for 130 years. Luxemburg has about 300,000,000 tons.

The comparatively recent opening of new iron-mines about Nancy and Briey has become important not only for the iron industry of Lorraine, but also for that of Westphalia. Formerly the exports and imports across the Franco-German frontier were about equal as far as iron ore is concerned. For some time the import of French iron ore has more and more exceeded the exports of German iron ore to France, and a large part of the French iron ore goes to the Ruhr district.

The Franco-German mineral trade tends to become more and more a trade in which the French exchange their iron ore against German coal, for there is a keenly felt lack of coal in the French iron-ore district near the German frontier.

The prosperity of the German and of the French iron industries depends on the vast deposits of iron ore which occur in the narrow district of Briey-Diedenhofen, on both sides of the Franco-German frontier. The opening

of these deposits has caused a rapid increase in the production of iron ore in both countries. The progress in the production of iron ore among the four principal iron-producing nations of the world is depicted in the following table:

IRON ORE PRODUCTION (TONS).

<i>Year.</i>	<i>In Germany.</i>	<i>In France.</i>	<i>In United Kingdom.</i>	<i>In United States.</i>
1870 ..	3,839,000	2,900,000	14,601,000	3,080,000
1875 ..	4,730,000	2,506,000	16,074,000	4,080,000
1880 ..	7,239,000	2,874,000	18,314,000	7,234,000
1885 ..	9,158,000	2,318,000	15,665,000	7,782,000
1890 ..	11,406,000	3,472,000	14,001,000	16,293,000
1895 ..	12,350,000	3,680,000	12,817,000	16,213,000
1900 ..	18,964,000	5,448,000	14,282,000	26,332,000
1905 ..	23,444,000	7,395,000	14,824,000	43,207,000
1910 ..	28,710,000	14,500,000	15,470,000	57,800,000
1913 ..	35,941,000	21,714,000	16,254,000	62,972,000

In 1870 the United Kingdom produced considerably more iron ore than Germany, France and the United States combined. In 1910 Germany and Luxemburg—the two are joined together, because Luxemburg belongs to the German Customs Union—produced practically as much iron ore as the United Kingdom and France combined. Between 1890 and 1900 Germany produced per year regularly from three to four times as much iron ore as France, but since then France has begun exploiting energetically the ores of the celebrated Briey district, and the result has been that French iron production has quadrupled since 1900, while German iron production has grown by only 84 per cent. during the same time. The jealousy of the German iron and steel magnates of the rapidly increasing iron industries of France has, no doubt, been one of the causes of the war. In 1913

France produced considerably more iron ore than the United Kingdom.

While France's production of iron ore has quadrupled since 1900, her production of iron has increased at a much slower rate, because she lacks the coal required for smelting it. The German handbook of the iron trade previously mentioned states:

The development of the French iron industries would have been a more favourable one if Eastern France did not lack coal. At the present moment (this was written in 1912) Germany furnishes already more than half of the coal used in the French iron ore district.

If coal and iron occur in districts separated from each other, one must either bring the coal to the iron or the iron to the coal. As, roughly speaking, three tons of coal are required for smelting a ton of iron, it is, as a rule, cheaper to take the iron to the coal districts and not the coal to the iron districts. Natural conditions and the manipulation of customs tariffs and freight rates by the German Government have compelled the French iron ore producers to sell constantly increasing quantities of their ore to the Germans, who have smelted it in the famous Ruhr district, where excellent coal abounds. The handbook of the German iron trade informs us:

The French iron ore is sold in constantly increasing quantities to the Ruhr district. This process has been greatly favoured by applying the Minette ore railway freight tariff to the railway stations on the French frontier.

While the Germans have smelted the bulk of the iron ore produced in Lorraine in the Ruhr district, they have treated part of it in Alsace-Lorraine itself, where the production of iron has increased from 222,070 tons in 1872 to 2,908,230 tons in 1911. They were able to do

this because coal can be carried very cheaply by water all the way from the Ruhr coalfield to the iron-mines of Alsace-Lorraine. The importation of German coal into Alsace-Lorraine has increased steadily and very greatly from year to year.

The official facts and figures supplied in these pages clearly prove that the Germans have not succeeded in gaining the affections of the inhabitants of Alsace-Lorraine; that, on the contrary, they have estranged them, and have caused hundreds of thousands to exile themselves, to turn towards France. The outbreak of the present War led to a further exodus of Alsatians and Lorrainers to France on the one hand, and to more severe measures of repression and persecution on the part of Germany on the other hand. In view of the official record of the relations between the Alsatians and the Germans, in view of the fact that the Germans have treated the inhabitants of the two provinces, not as lost brothers, but as irreconcilable enemies, it is obviously idle to assert that Alsace-Lorraine is historically a German land, and that its inhabitants are Germans by race, language descent, and sympathy, and that they are satisfied with their lot and wish for no change of government. The Alsatians and Lorrainers have indicated, not merely by words, but by deeds, that they wish to be reunited to France, and if the principle of nationalities and of democracy has any meaning, it follows that their desires should be fulfilled at the Peace.

The loss of Alsace-Lorraine has never been forgotten by the people of France. Most Frenchmen and most sympathisers with France desire, for sentimental reasons, that Alsace-Lorraine should be returned to France. However, there are also very important practical reasons in favour of that policy. In 1871 Germany, inclusive of Alsace-Lorraine, had 41,000,000 inhabitants, and

France, without these provinces, had 36,000,000 inhabitants. Before the outbreak of the present War Germany had 67,000,000 people and France had 40,000,000 people. Since the Peace of Frankfort the population of the one country has increased by 26,000,000 and that of the other by only 4,000,000 people. Germany's population has increased since 1871 with amazing rapidity, owing to the enormous development of the German manufacturing industries. Their wonderful expansion has chiefly been due to Germany's wealth in coal. On the other hand, France's population has remained almost stationary because France lacks coal. If France should regain Alsace-Lorraine she would receive 2,000,000 new citizens. There would then be 42,000,000 Frenchmen as against 65,000,000 Germans. However, she might in addition obtain millions of further citizens if the possession of Alsace-Lorraine was coupled with provisions which would enable France to develop the manufacturing industries of the country, and particularly to exploit the vast iron-ore fields of Alsace-Lorraine over which she would obtain control.

Coal and iron are the twin foundations of modern manufacturing. Both are equally indispensable in war. Coal and iron provide arms, munitions, ships and military supplies of every kind, and their possession and exploitation lead to a vast increase of population, as I have shown in the previous chapter. It will probably be better for the people of the world if by far the largest ironfield of Europe should be, not in Germany's hands, but in the hands of France. The loss of her largest ironfield to France would undoubtedly weaken Germany's military power, but it would not correspondingly increase France's strength, unless that country was given at the same time a sufficiency of coal wherewith to smelt the iron ores of Alsace-Lorraine. The two provinces contain apparently

little coal. Close to them lies the Saar coalfield, which Prussia detached from France after the Napoleonic Wars. Many Frenchmen demand the return of the Saarbrücken and its coal-mines in addition to that of Alsace-Lorraine. However, the possession of the Saar district, though valuable for sentimental and practical reasons, would not benefit very greatly the French iron industry and France's general industries. The Saar coalfields are comparatively unimportant, and the coal is poor in quality and not very suitable for smelting. Therefore the Germans have treated the iron ore of French and German Lorraine with coal from the Ruhr district. They have smelted it partly in the famous Dortmund-Essen coal district, partly in Alsace-Lorraine itself. They could transport coal cheaply from Dortmund to Lorraine, because the two districts are connected by waterways. In a table previously given it was shown that between 1872 and 1911 iron production in Alsace-Lorraine had increased from 222,070 tons to 2,908,230 tons. In 1911 Alsace-Lorraine alone produced as much iron as did all France in 1904. If the stipulations of the Peace should enable France to obtain all the Ruhr coal she requires she could at a stroke double her iron production, and might create in Alsace-Lorraine a manufacturing district similar to the celebrated Rhenish-Westphalian district, where on an area no larger than a small English county six million people live. The population of the two provinces might be doubled and quadrupled within a few decades.

If the Peace should bring to France the invaluable gift of a sufficiency of coal, not only the industries of Alsace-Lorraine, but of all France, would flourish as never before. If, on the other hand, France should receive at the Peace only Alsace-Lorraine, the iron ore contained in the country would be of little value to the French

nation. It would merely enrich a few mineowners and provide work for some thousands of miners. The iron ore of Diedenhofen and of Briey would either remain unutilised or would have to be exported for smelting. As the Ruhr coalfield is most conveniently situated, France would be absolutely dependent on Germany's coal for the prosperity of her industries, and the German Government would undoubtedly exploit that position to the utmost. It would strive to develop the industries of Germany and to stifle those of France, and the consequence would be that Germany would continue to grow rapidly in wealth, industrial strength, population and warlike power, while France would remain stationary and would in course of time become Germany's vassal.

By receiving Alsace-Lorraine with an adequate supply of coal France would obtain an actual increase of 2,000,000 inhabitants and a potential increase of many millions of her population. An ample supply of coal would double and quadruple the population of Alsace-Lorraine, and would undoubtedly speedily increase the birth-rate throughout France, while the loss of her iron and the stagnation of her iron industry would tend to limit the increase of population in Germany. The economic factor alone might create a healthy balance between the two countries.

According to the most reliable geological estimates, the Dortmund-Essen district contains far more coal than the whole of the United Kingdom. The Westphalian district can therefore easily spare all the coal which France needs. If the War should end in the victory of the Allies, France should receive not only those territories which are in Germany's hands and to which France has a just claim, but she should be given at the same time conditions which will allow the sorely tried French people to prosper and to increase. Germany might pay the indemnity for damage done to France partly in coal.

CHAPTER XII

THE ECONOMIC POSITION AND FUTURE OF ITALY*

MANY Englishmen view Italy's attitude during the War with somewhat mixed feelings. They are full of admiration for the gallantry and generous determination with which in May, 1915, at a time when the outlook for the Allies was extremely dark, Italy resolved to fight for the Right and drew her sword regardless of the consequences. At the same time they are greatly puzzled by certain aspects of Italian policy and by certain manifestations of the national will which seem scarcely reconcilable with Italy's high purpose and ideal motives. They have learned with surprise that at the beginning of the War many Italians, wishing to maintain a passive neutrality to the end, passionately opposed Italy's participation in the War and considered the intervention of their country a serious blunder, if not worse, and they are still more puzzled when they are told that even now many Italians distrust France and England and would welcome a peace by agreement with the Central Powers. Moreover, they cannot understand why many of those Italian idealists who have gone to war in order to vindicate the right of nationalities to govern themselves, and who assert that they are fighting in order to free the Italians of the Trentino and of Trieste from an alien yoke, have demanded that their country should acquire by force territories

* From *The Nineteenth Century and After*, February, 1918.

inhabited by Greeks and Serbians without regard to the wishes and the national claims of their inhabitants. The policy of absolute rulers is shaped by their personal ambitions, while that of democratic nations springs from their pressing needs. Italy, like England, is a crowned democracy. Necessity, not ambition, dictates her policy. Unfortunately, the national needs of Italy are not sufficiently known abroad. In the following pages an attempt will be made to describe and analyse as exhaustively as possible Italy's position and her national desires and requirements, by means of the Italian Government publications, such as the Censuses, the Agricultural and Industrial Reports and the excellent *Annuario Statistico Italiano*, which supplement the information which the author has gathered in the country. Such an analysis may do a great deal of good. It should make understandable Italy's attitude and policy, and free it from the suspicion of ambiguity. A complete understanding of Italy's vital needs may conceivably lead to certain measures on the part of the Allies which will create the closest intimacy between Italy and her partners for decades and perhaps for all time. It may lead to a new departure in international policy, to measures which may be summed up in the phrase "An Empire for Italy."

The Italians possess to the strongest extent the artistic temperament. They are a nation of warm-hearted idealists who are apt to be carried away by their feelings. Still, even the greatest idealists cannot afford to be guided exclusively by ideal motives, and to forget altogether the compelling demands of practical necessity. The Italians are at the same time idealists and business men. They went to war not only in order to defend the Right and to free their brothers who live in bondage on the other side of the Austrian frontier, as many Englishmen believe, but they were animated at the same time by a

larger and a more practical purpose, although it was little mentioned. Even the most passionate Irredentists hoped that a victorious war would not merely give to their country the unredeemed provinces, but that it would establish the security and economic well-being of the people and give to the Italian nation the resources and the elbow-room which it urgently requires. It is not sufficiently realised that Italy's expansionist aims spring, not from the lust of conquest, from the desire of dominating and exploiting other nations, but from compelling economic necessity.

Countless men who have travelled in Italy have commented on the fact that the two great characteristics of the country are its beauty and its poverty. Many observers who remembered Italy's former wealth have attributed the poverty of the inhabitants to a too generous and enervating climate, to popular hostility to progress, to the influence of the Roman Catholic Church, to the exactions of the Italian landed nobility, or to sheer inborn laziness and stupidity. The last explanation is the one most frequently heard. In reality the Italians are on the whole an exceedingly wide-awake, progressive, hard-working and frugal race, which for centuries has been kept back by foreign tyranny and misgovernment, and which is severely handicapped in the race for material success by the inadequacy of the natural resources. The beautiful climate, the ever blue sky and the glorious vegetation of the country merely disguise its natural poverty to the casual visitor.

The prosperity of a country depends upon the energy and intelligence of its inhabitants and upon a sufficiency of those natural resources which enable the people to make a living. Agriculture and the manufacturing industries are the principal wealth-creating factors of a nation, for commerce by itself produces only little.

As Italy possesses scarcely any coal and iron, upon which the modern manufacturing industries are based, she depends for her existence chiefly on her rural industries, and the progress of these is greatly impeded by the soil, configuration and climate of the country, and by the insufficient quantity of land available for agricultural purposes. Italy is one of the most densely populated countries in the world, as the following figures will show:

	<i>Inhabitants per Square Mile.</i>		
United Kingdom	372·6		
Italy	313·5		
Germany	311·0		
France	191·2		
Spain	100·6		

It will be noticed that per square mile the population of Italy is three times as great as is that of Spain, that it is more than 50 per cent. greater than that of wealthy France; that it is somewhat greater than that of Germany, which is blessed with huge agricultural plains, many navigable rivers, and with inexhaustible mineral and industrial resources; and that it is almost as great as that of the United Kingdom itself.

Before considering Italy's agriculture it should be pointed out that agriculture, even if carried on under the most favourable conditions, is far less potent as a wealth-creating factor than is manufacturing. The Americans produce in their gigantic country some of the most valuable crops in the world. Among the nations of the world the United States have the largest production of wheat, maize, oats, tobacco, cotton, cattle, pigs, etc. Yet, according to the American Census of Production of 1910, the value of all American crops was in 1909 only \$5,487,161,223, while the value of all manufactured goods produced in that year amounted to no less than 20,767,546,000 dollars, or almost four times as much.

Agriculture is carried on most easily and most profitably on the level ground of sheltered and well-watered plains. A glance at the map shows that Italy is an exceedingly mountainous land, that the proportion of level plain is very small. As the large forests which formerly covered the Italian hills were ruthlessly cut down in the past, the earth which covered them was washed into the valleys. The hills became barren, and the consequence is that the Italian mountain streams dry up in time of drought and become raging destructive torrents when it rains. Modern Italy is endeavouring with infinite labour to reafforest the mountains and to control the streams.

Italy possesses not only a totally insufficient proportion of level ground, but a very large part of the Italian plains consists of marshes and swamps. Moreover, the Italian plains, and the uplands too, are stricken by malaria, which is almost universal. Malaria is a notifiable disease in Italy. In 1914 no fewer than 214,092 cases of malaria were reported to the authorities. Owing to the energetic steps taken by the Italian Government, which is draining swamps, introducing good sanitation, providing free quinine for the poor, etc., the deadliness of the scourge has much diminished. The deaths from malaria have thus been reduced from 13,358 in 1901-1902 when the State began the distribution of quinine, to 2,042 in 1914. Still, malaria debilitates a large part of the population. The prevalence of this disease has forced millions of Italians to abandon the plain where they have to work and to live in towns on the hills. Hence farmers and labourers lose many hours every day in going to and from their work, and in carting produce of every kind, and even water, up and down the hills which they inhabit.

The Italian climate, which seems so generous to the

tourist, is, after all, not very favourable to agriculture. The country suffers frequently from drought, which plays havoc with the harvest. That may be seen from the startling fluctuations in the produce of the great staple crops. In 1909 Italy produced 61,772,710 hectolitres of wine. In 1910 she produced only 29,293,240 hectolitres, or less than half as much. In 1909 she produced 2,559,200 hectolitres of olive oil, but in 1910 only 1,384,600 hectolitres, or about half the former quantity. Between 1911 and 1912 the olive-oil production declined from 2,422,300 hectolitres to 958,000 hectolitres, or to nearly one-third; while the important chestnut crop fell from 8,290,000 quintals in the former year to 4,980,000 in the latter year. Between 1914 and 1915 the wine production sank from 43,046,000 hectolitres to 19,055,000 hectolitres, or to less than one-half.

Italian agriculturists have endeavoured to overcome their difficulties by unremitting and intelligent labour. They have drained swamps, planted forests, regulated the mountain torrents and irrigated the land subject to drought. They have introduced many exotic plants and animals. Thus, Italy produces vast quantities of tobacco, cotton, rice, maize, Indian figs, flax, hemp, silk, sugar, etc., and buffaloes wallow in the swamps. Besides, they have hewn countless terraces out of the barren rocks, and have covered them with earth, seaweed and other manure carried up in baskets. Hence mountains which consisted formerly of sheer rock are now covered with prolific orange and lemon groves vines, etc.

Owing to the care and labour bestowed upon agriculture, the production of Italy's rural industries has rapidly and continually increased, as the following representative figures show:

PRODUCTION OF—

<i>Year.</i>	<i>Grain.</i>	<i>Maize.</i>	<i>Wine.</i>
	<i>Quintals.</i>	<i>Quintals.</i>	<i>Hectolitres.</i>
Average 1879-1883	36,318,000	21,356,000	36,760,000
1911	52,362,000	23,796,000	42,654,000
1912	45,102,000	25,063,000	44,123,000
1913	58,452,000	27,532,000	52,240,000

Italy's agriculture has prospered largely because, under Government auspices, scientific processes have been applied to it. It is worth noting that the consumption of superphosphates by the Italian agriculturists has increased from 4,311,512 quintals for the average of the years 1901-1903 to 10,409,663 for the average of the years 1910-1912.

The number of animals kept has vastly increased. Between 1876 and 1908, in which years live-stock censuses were taken, the following changes have occurred:

<i>Year.</i>	<i>Horses.</i>	<i>Mules.</i>	<i>Asses.</i>	<i>Cattle.</i>
1876 ..	625,957	292,983	498,766	3,489,125
1908 ..	955,878	388,337	849,723	6,218,227

<i>Year.</i>	<i>Sheep.</i>	<i>Goats.</i>	<i>Pigs.</i>
1876	6,977,104	1,688,478	1,553,582
1908	11,162,926	2,714,878	2,507,798

It will be noticed that during the period under consideration very important increases have been universal. The great progress in Italy's agriculture may furthermore

be seen from the rapid increase of certain exports such as the following:

EXPORTS OF—

<i>Year.</i>	<i>Maccaroni, etc.</i>	<i>Oranges and Lemons.</i>	<i>Cheese.</i>
	<i>Quintals.</i>	<i>Quintals.</i>	<i>Quintals.</i>
1893	89,148	1,978,134	66,397
1903	265,904	3,095,860	150,405
1913	709,921	4,365,409	328,044

Although Italy's agriculture has marvellously progressed, the income derived from it is comparatively small. The prices of Italian wine, oil, oranges, lemons, figs, etc., have been depressed by the competition of France, Spain, United States, Asia Minor, North Africa, and of other countries which can produce and export very cheaply. Hence the Italian agriculturists derive only small profits. Life is a very hard struggle for them.

Italy's soil, with the exception of the Lombardo-Venetian Plain and other favoured spots, is semi-arid and poor. Unfortunately, the sea which washes Italy's extensive shores does not compensate the country for the insufficiency of its agricultural resources, for the sea lacks fish. Exactly as it is widely believed that Italy's agriculture is exceptionally prosperous because the country produces luxury foods such as oranges, olives, figs, almonds, peaches, wine, etc., even so it is often assumed that Italy's fishing is a great source of wealth because, apart from fish, the Italian fishermen gather such valuable articles as coral and sponges. In 1912 the total value of all the fish caught came to £951,000, and that of all coral and sponges gathered to only £54,400. In the aggregate the Italian fishing industry produced in 1912 a harvest worth £1,005,400. The insignificance of that amount may be gauged from the fact that in the

same year the British fisheries yielded fish and shell-fish to the value of £13,234,426. In Italian fishing, as in Italian agriculture, the maximum of labour yields only a minimum of profit.

Italy's difficulties in making a living by agriculture and fishing are great, but her difficulties in developing her manufacturing industries are still greater. Modern manufacturing is founded upon coal and iron. Unfortunately, among the great nations of the world Italy is poorest in the most essential minerals. Her coal production compares with that of some other countries as follows:

COAL AND LIGNITE PRODUCED IN 1912.

	Tons.
In United States	525,427,837
In United Kingdom	260,416,338
In Germany	255,810,094
In Belgium	22,972,000
In Italy..	663,812

The United Kingdom produces more coal in a single day than Italy produces in a whole year, and little Belgium produces thirty-three times as much. Moreover, the trifling quantity of coal raised in Italy is of very low quality.

Italy's lack of iron ore is equally striking, as will be seen from the following table:

IRON-ORE PRODUCTION IN 1912.

	Tons.
In United States	60,440,100
In Germany	22,692,000
In France	19,500,000
In United Kingdom	14,011,700
In Italy	582,066

It is believed by many that Italy derives a large income from the exploitation of her minerals, because she pro-

duces considerable quantities of sulphur, tin and beautiful marble. However, the competition of other nations has kept prices so low that Italy obtains only a trifling income from her mineral resources. Her relative poverty in that respect will clearly be seen from the following figures :

VALUE OF ALL MINERALS PRODUCED IN 1912

	£
In United States	448,794,498
In United Kingdom	131,220,853
In Italy	3,768,000

In order to supply her railways, ships, factories, gas-works, etc., with the necessary fuel, Italy must import the bulk of the coal used, which thus is very expensive to the consumers. In 1912, for instance, when she produced 663,812 tons of coal, she imported from abroad 13,305,000 tons, or twenty times as much.

Italy's iron and steel industry depends on foreign countries not only for its coal, but also for the bulk of its iron, which is imported partly in the form of ore and partly in that of metal. Notwithstanding her lack of coal and iron, Italy has succeeded in rapidly increasing her production of steel. While in 1900 she produced only 115,887 tons of steel, in 1912 she produced 801,907 tons. It is obvious, however, that the position of the Italian iron and steel industry is exceedingly precarious owing to its complete dependence upon imported coal and iron.

Exactly as the Italian agriculturists have succeeded in cultivating the barren rocks by converting them into prolific gardens, the Italian manufacturers have learned how to manufacture without coal. Electrical and other machinery has been called in to replace steam-power. The development in the use of power in the manufacturing

industries has been as follows according to the last Industrial Censuses:

HORSE-POWERS IN THE MANUFACTURING INDUSTRIES.

<i>Year.</i>	<i>Steam.</i>	<i>Hydraulic.</i>	<i>Gas, Oil-engines, etc.</i>	<i>Total.</i>
1903 ..	289,735	418,481	26,058	734,274
1911 ..	471,043	951,836	197,525	1,620,404

Between 1903 and 1911 the industrial horse-power employed has more than doubled, and the progress made has been particularly remarkable in the case of gas and oil engines and of hydraulic power. Happily, Nature has given to the Italians an abundance of power in the form of waterfalls which can be converted into electricity. According to Government investigations, at least 5,000,000 horse-powers are available, and the conquest of the Trentino should furnish an additional 250,000 horse-powers. Vast power can also be provided by the formation of artificial lakes which the Government has planned. The Italian authorities intend not only to provide an abundance of electrical power for industrial purposes, but to electrify the whole of the national railways, eliminating the use of coal as far as possible. Possibly science will succeed in improving electrical smelting to such an extent that the Italian iron and steel industries also will become independent of imported coal.

Among the most progressive Italian manufacturing industries are the textile industries, the production of machinery—Italian silks, cottons, motor-cars, etc., are universally appreciated—the electrical industry, the chemical industry, etc. The expansion of the chemical industry may be gauged from the fact that Italy's production of sulphuric acid increased from 59,362 tons in

1893 to 644,713 tons in 1913. Similar increases have taken place in other chemical productions.

The energy and success with which Italy has developed her manufacturing industries may be seen from the rapid increase in the imports of certain raw materials employed in manufacturing and in the exports of manufactured goods.

IMPORTS.

<i>Year.</i>	<i>Cotton.</i>	<i>Wool.</i>	<i>Coal.</i>	<i>Copper and Brass.</i>
1893 ..	<i>Quintals.</i> 987,080	<i>Quintals.</i> 89,983	<i>Tons.</i> 3,724,401	<i>Quintals.</i> 30,426
1903 ..	1,541,646	153,542	5,546,823	60,963
1913 ..	2,018,808	286,391	10,834,008	502,802

EXPORTS.

<i>Year.</i>	<i>Silk Textiles.</i>	<i>Cotton Thread.</i>	<i>Cotton Cloth.</i>
1893	<i>Lire.</i> 18,866,000	<i>Quintals.</i> 7,087,000	<i>Quintals.</i> 28,416,000
1903	68,454,000	92,018,000	172,916,000
1913	108,225,000	146,142,000	493,946,000

Of course, there are industries which have not prospered. Still, on the whole the Italian industries have progressed very greatly. Between 1893 and 1913 the imports of all raw materials used in the industries increased from 635,000,000 lire to 2,092,000,000 lire, or more than threefold, while the exports of all partly or wholly manufactured goods increased during the same period from 468,000,000 lire to 1,389,000,000 lire, or almost exactly threefold.

While Italian agriculture and the Italian manufacturing industries have been heavily handicapped by Nature,

Italy's commerce has been similarly handicapped both by Nature and by the action of man. The length and narrowness of Italy's territory and the difficulty of carrying goods from one seashore to the other because of the intervening mountain walls have been a great impediment to internal commerce. Owing to its configuration, cheap inland transport, which is one of the mainsprings of commerce, is lacking. Italy possesses no navigable rivers except in the Lombardo-Venetian Plain, and scarcely any canals, for shipping on rivers and canals is practicable only on level plains. Lastly, the construction of railways and roads is most expensive in Italy. Innumerable tunnels have to be bored through rocks, chasms have to be bridged, and both roads and railroads have frequently to be based upon enormous viaducts, which form so noteworthy a characteristic of the Italian landscape. Both railroads and carriage-roads have to overcome heavy gradients, which are very unfavourable to cheap and easy transportation. We can, therefore, not be surprised that inland transport is comparatively dear and insufficiently developed, except in the Lombardo-Venetian Plain and other favoured spots.

Italy lies midway between the East and the West. The great wealth of ancient Venice, Florence and Genoa was due to the fact that these towns handled a large portion of the commerce which was carried to and fro between Central and Western Europe on the one hand and Asia and Africa on the other. Owing to their geographical position and to the piercing of the Alps by numerous tunnels, Venice and Genoa should still handle a very large portion of the international trade, to the great benefit of Italy. Unfortunately, both Germany and Austria have succeeded in depriving Italy of the bulk of her legitimate share in international commerce. By the preferential tariff of the State railways Germany

and Austria-Hungary have succeeded in diverting the trade of South Germany, Southern Austria and Switzerland, which naturally should flow by way of Genoa and Venice, to Hamburg, Bremen, Antwerp and Trieste, to the great injury of the Italian merchants, the Italian railways, the Italian Merchant Marine and the Italian people.

Notwithstanding the difficulties caused by the unkindness of Nature and the selfishness of Germany and Austria-Hungary, Italy's trade and commerce have wonderfully increased owing to the energy, ability and industry of the people. The expansion of Italy's oversea trade may be gauged from the following figures:

TONNAGE OF GOODS FORWARDED FROM AND RECEIVED AT ITALIAN PORTS.

<i>Year.</i>						<i>Tons.</i>
1883 ..	..	..	..	..	..	10,629,027
1893 ..	..	..	..	..	..	13,213,131
1903 ..	..	..	..	..	..	19,419,876
1913 ..	..	..	..	..	..	31,821,882

Since 1883 Italy's sea trade has exactly trebled, and during the last decade it has increased by more than 50 per cent.

The development of Italy's internal trade may be seen by the wonderful development of her banks. The accounts of the Banca Commerciale, the leading institution, show the following progress:

<i>Year.</i>	<i>Capital.</i>	<i>Deposits.</i>	<i>Balances.</i>	<i>Securities.</i>
	<i>Lire.</i>	<i>Lire.</i>	<i>Lire.</i>	<i>Lire.</i>
1895 ..	20,000,000	64,924,650	40,152,931	53,546,598
1905 ..	105,000,000	129,698,124	254,509,804	490,841,771
1913 ..	130,000,000	232,857,338	512,929,167	819,602,962

On December 31, 1916, the total assets of the Banca Commerciale came to 2,941,988,583 lire, or to £118,000,000. That bank ranks now among the foremost institutions of the world.

The Italian people have not only worked hard in field, factory and counting-house, but they have also saved hard. The Italians are probably the most thrifty nation in Europe. At any rate, it may be asserted that in no European country have popular savings accumulated more rapidly than in Italy. The Italian Government Statistics supply us with the following most remarkable record:

DEPOSITS IN SAVINGS BANKS AND SAVINGS INSTITUTIONS.

Lire.

1883 ..	..	..	..	..	1,151,013,670
1893 ..	..	..	..	..	1,977,025,416
1903 ..	..	..	..	..	3,256,132,950
1913 ..	..	..	..	..	5,796,151,626

These figures exclude the deposits in the Banks proper. Including these the deposits in 1913 amounted to 7,220,376,045 lire, or to about £300,000,000.

Only those who have lived in Italy or who have studied impartial and reliable records can realise the self-abnegation with which the Italian workers save in order to leave a competency to their families. Even the poorest workers—and the unskilled Italian labourers are wretchedly poor—put money by, stinting themselves of the very necessaries of life. The thrift of the Italian labourers has attracted attention wherever they have gone. In September, 1907, the United States Department of Commerce and Labour published a most interesting Report on *Italian, Slavic and Hungarian Immigrants*, which shows that among the foreign immigrant labourers the Italians are by far the thriftiest. That fact is not based on vague estimates, but on comprehensive exact

and comparative data furnished by many hundreds of observations made during a considerable space of time. We read, for instance:

The average income per man for a representative month in 1905, for the 679 men shown above, was \$34.49, the average cost of living was \$7.20, and the average surplus over cost was \$27.29.

The average income per man for a representative month in 1906, for the 1530 men shown, was \$37.07, the average cost of living was \$6.79, and the average surplus over cost was \$30.28.

It will be noticed that, roughly speaking, the Italian labourers lived on about 1s. a day, saving the rest of their wage. In the first example given the Italian labourers spent on themselves only one-fifth of their income, saving the remaining portion. In the second they spent about one-sixth of their earnings, saving the remaining five-sixths. Whereas in the anthracite region Anglo-Saxon labourers pay for their board from \$16 to \$18 a month, and whereas Slavonic labourers paid from \$10 to \$12, the Italian labourers expended, according to the Report, only \$5 per month. Unfortunately, many Italian labourers have undermined their health by exaggerated thrift. The American Report stated:

Contractors have in many instances complained of the lack of strength of the Italian labourers in the United States, and have attributed it to insufficient food. The general manager of the leading contracting company in the Southern States, writing from Tennessee, says: "The main trouble with the Italian is that he does not eat enough to furnish him with the proper nourishment needed in the work. Of course, if a man is not properly fed he cannot do a good day's work. . . ."

With this slender fare they cannot maintain their strength, and soon sink into the anæmic condition which precedes consumption. It is almost useless to point

out to them the necessity of more food to meet the harsher climate and heavier work of this country. They have come here to earn and to save money, and save it they will, at the expense of health and life.

It may be safely asserted that practically all Italians save. However, savings deposits vary greatly in Italy. In the Northern provinces, where water-power is cheap and plentiful, and especially in the Lombardo-Venetian Plain, savings per head are high. In the poor and backward South they are low. In the province of Lombardy the savings amounted in 1912 to 288·70 lire per head of population, but they came in Sicily to only 88·13 lire, and in the Abruzzi to only 72·02 lire per head of population.

It should be borne in mind that the savings deposited in the Italian banks are not all derived from earnings in Italy. The Italian emigrants send their savings home, and their relatives place them into the savings banks for security. Italian Government officials and economists usually estimate that the Italian emigrants remit to the mother country at least 500,000,000 lire per annum. On the other hand, it should not be believed that the sums deposited in the savings banks represent the total of the popular savings. A very large part of these is invested in freehold farms, houses and Italian Government Stock. During the last twenty years at least £200,000,000 of Italian Government Stock has been bought abroad by the Italian people and has been sent to Italy. Two decades ago Italy held only about 50 per cent. of the national debt. In 1913 the Italians held more than 80 per cent. of their national debt. As the Italian business men invest their savings largely in their business, it is clear that the savings banks deposits have been vastly increased, and that the price of the Government Stock has been raised from year to year chiefly through the determined thrift of the poorer classes,

through the savings of small farmers, shopkeepers, manual workers, etc. Every Italian banker knows that this is the case.

Study of Italian industrial conditions shows that not only agriculture, the manufacturing industries and commerce have rapidly progressed, but that the whole country has advanced, and that the working people have had a considerable share in the advance made. The capital of the co-operative societies has increased between 1906 and 1910 from 55,101,936 lire to 151,852,579 lire. In town and country the workers display increasingly a sturdy sense of independence.

The material progress of the nation as a whole is evident to all who habitually visit Italy. Moreover, it appears clearly from the Government statistics. In 1894-1895 Italy had only 11,173 telephone subscribers. By 1914-1915 their number had increased to 99,593. In 1897-1898, 186,862,000 units of electric light were used in Italy. By 1915-1916 their number had increased to 2,163,396,000 units.

Although the Italian Government and people have done their utmost to advance the country materially, intellectual progress has not been neglected. The statistics relating to the Universities, technical schools, libraries, benevolent institutions, etc., show a rapid and uninterrupted advance. The proportion of analphabets above six years for the whole of the kingdom was in 1872 69 per cent., in 1882 62 per cent., in 1901 48 per cent., and in 1911 38 per cent. The number of analphabets from 12 to 15 years old was reduced between 1901 and 1911 from 37·6 per cent. to 24·6 per cent. Analphabets are getting very rare in the Northern provinces, where education is excellent. In 1872 there were large stretches of the country where 80 per cent. of the population could neither read nor write.

From the facts and figures given in the preceding pages it will be clear that the Italian people, working and saving with the greatest determination, have achieved remarkable progress in every direction. Working and saving with heroic energy and self-denial, they have raised their country very considerably. Nevertheless, Italy has remained poor and is unable to nourish her inhabitants. The reason is that the Italian population increases at a quicker rate than the national wealth. During the last fifty years of the Census Italy's population has grown as follows:

POPULATION WITHIN THE PRESENT LIMITS OF ITALY.

Year.

1862 ..	25,000,000	=	87.2	per square kilometre.
1872 ..	26,801,154	=	93.5	" " "
1882 ..	28,459,628	=	99.3	" " "
1901 ..	32,475,253	=	113.3	" " "
1911 ..	34,671,377	=	120.9	" " "

The rapid increase of the national population has forced the Italians, who formerly were a home-staying people, to emigrate in order to make a living. Italian emigration has begun only recently, but it has increased at a rate which is positively terrifying to many patriotic Italians. According to the figures furnished by the emigration authorities, Italian emigration has, since 1881, developed as given in table on p. 314.

The increase of Italy's emigration is truly alarming. In 1881 the bulk of the Italian emigrants went to European and to the Mediterranean countries close at hand, such as Tunis. In 1913 the bulk of the Italian emigrants went to Transoceanic countries. Between 1881 and 1913 the number of Transoceanic emigrants increased from 41,064 to the gigantic number of 559,566. The consequences of this enormous loss of population are revealed in the Censuses. Emigration is particularly great from

the poorest provinces of Italy, from the South. It is fairly great from the Central provinces, and comparatively small from the Northern provinces, and especially from those which possess cheap and plentiful water-power and which are situated in the bountiful Lombardo-Venetian Plain. While the population of Lombardia, Venetia, Liguria, Emilia, is increasing rapidly and while that in the Marche, Umbria, Calabria, is almost stagnant,

ITALIAN EMIGRATION.

Year.	To European and Mediterranean Countries.	Trans- oceanic.	Total.	Immigrants Returning from Overseas.
1881 ..	94,768	41,064	135,832	?
1886 ..	84,952	82,877	167,829	?
1891 ..	106,056	187,575	293,631	?
1896 ..	113,235	194,247	307,482	?
1901 ..	253,571	279,674	533,245	?
1906 ..	276,042	511,935	787,977	157,987
1907 ..	288,774	415,901	704,675	248,428
1908 ..	248,101	238,573	486,673	300,834
1909 ..	226,355	399,282	625,637	134,210
1910 ..	248,696	402,779	651,475	161,148
1911 ..	271,065	262,779	533,844	218,998
1912 ..	308,140	403,306	711,446	182,990
1913 ..	313,032	559,566	872,598	188,978

that of the Abruzzi, of Campania, apart from Naples, of the Basilicata and of parts of Sicily, has actually decreased.

Of the Italian emigrants, the vast majority, about 81 per cent., are men, and the result is that at the Census of 1911 the persons of the female sex were found to be far more numerous than those of the male sex in several provinces. In the Abruzzi and Molisi, for instance, there were 767,893 females and only 662,813 males. In Campania there were 1,715,354 females and only

1,596,636 males. In Calabria there were 750,015 females and only 652,046 males. Needless to say, the males who remain in the provinces from which emigration is particularly heavy consist very largely of old men and young boys. Italy is losing by emigration the flower of her manhood.

As the emigration problem is one of the most serious, if not the most serious, Italian problem, it is necessary to study it a little more closely. Let us, then, inquire which countries are most attractive to the Italian emigrants. According to the Government returns, Italian emigrants went in 1913 to the following countries:

To France ..	..	..	..	..	83,435
To Switzerland ..	..	..	..	..	90,019
To Austria-Hungary ..	..	..	..	..	39,033
To Germany ..	..	..	..	..	81,947
To United States ..	..	..	..	..	376,776
To Canada ..	..	..	..	..	30,699
To Argentina ..	..	..	..	..	111,500
To Brazil ..	..	..	..	..	31,952
To Australasia ..	..	..	..	..	1,682

A detailed analysis of emigration from the various Italian provinces shows that the men from the Northern provinces go principally to Europe, France, Switzerland, Austria-Hungary and Germany, which are near to hand, while the emigrants from the Central and especially from the Southern provinces go oversea, especially to the United States, Canada, Argentina and Brazil.

It is highly significant that of the Italian emigrants about 81 per cent. are men and only about 19 per cent. are women. As a rule, the men emigrate and leave their wives and children at home. The Italians are intensely fond of their country and of their surroundings, and they abhor the idea of settling permanently abroad. They emigrate only in the hope of saving enough money

to live in beautiful Italy. Herein lies the pathos of the great emigration movement, for naturally very many Italian emigrants are not able to return. Hence they remain abroad much against their will. Although the vast majority of Italian emigrants mean to leave their country only for a short spell, intending to come back as soon as possible, vast numbers have remained abroad. They have remained abroad either because they have not succeeded in accumulating enough money or because they discovered that they could make a better living abroad than in Italy. Naturally, many of the successful emigrants have sent for their families. Herein lies the reason that, although as a rule men only emigrate in search of work, 19 per cent. of the emigrants consist of women.

Let us now see where the bulk of Italy's emigrants have settled. Let us study the natural current of the stream. According to carefully drawn up estimates published by the Italian Emigration Commission, the Italians living outside of Italy in 1910 were distributed as follows:

In Northern and Eastern Europe		5,285	
In Western Europe (France)	..	444,660	
In Central Europe (Germany, Switzerland, Austria-Hungary)		406,000	
In Southern Europe	..	44,617	
			900,562
North Africa	..	181,027	
South Africa	..	10,892	
			191,919
North America	..	1,801,623	
South America	..	2,638,952	
Central America	..	4,481	
			4,445,056
Asia	..		12,500
Australasia	..		7,709
Total	..		5,557,746

During a few decades 5,557,746 Italians have settled abroad, and the great majority of these will probably not return. It will be noticed that the current of Italian emigration goes with approximately equal strength to Southern and to Northern countries. The number of Italians who have settled in North America and in Europe is almost exactly as large as that of the men who have settled in South America and in North Africa, where the climate approximates that of Italy. It is therefore obvious that the principal aim of the emigrant Italian is to find good work at a good wage, and that he does not care very much whether the country in which he works resembles Italy or is comparatively bleak and inhospitable.

The fact that the vast majority of Italian emigrants intend to leave Italy only for a short time, that they wish to return as soon as possible to the land of their birth and to their families, is apparent not only from the phenomenon that 81 per cent. of the Italian emigrants are men, but also from the Census which was taken on June 10, 1911. The Census forms contained questions relating to Italians who were living abroad. One of these questions asked for information regarding emigrants who were expected to return to Italy during the Census year. From the classification of the replies received it appears that 1,124,003 Italian emigrants were expected to return to Italy in 1911, according to the information supplied by their families. The impossibility of the return of 1,124,003 emigrants is obvious from the fact that, according to a table previously given, only about 200,000 emigrants return on an average every year from countries overseas. Of these 1,124,003 emigrants whose return was expected by their families during the second half of 1911, no fewer than 725,644 were reported to be in extra-European countries.

Within a very few years many American States have

been swamped by a sudden inrush of Italians. In South America, where in 1910 there were 2,638,952 Italians, the Italian emigrants occupy proportionately a most important position. However, in the United States also the proportion of Italians is exceedingly great. According to the American Census of 1910, there were in the United States 1,343,070 Italians. The significance of that number may be seen from the fact that there were at the same time only 876,455 English-born people in the United States, while England, Scotland and Wales combined accounted for 1,221,283 people in that country. As the population of Italy is approximately equal to that of England alone, the proportion of Italian people in the United States is 50 per cent. greater than that of the English people living in that country. In New York alone there were at the time of the Census 340,770 Italians, a larger number than the population of Palermo.

An analysis of Italy's economic position shows clearly that the poverty of the Italian people is due, not to their ignorance and laziness, as is frequently asserted by the ill-informed and the superficial, but to the great density of Italy's population, to its rapid increase, and especially to the extraordinary inadequacy of the natural resources, which impedes the development of Italy's agriculture, fishing, manufacturing industries and trade. Close study of economic Italy shows clearly that the Italians are earnest, intelligent and most industrious workers, who by unremitting toil and superhuman frugality and thrift have vastly improved their position, and who deserve general sympathy and support in their heroic struggle with adversity.

The full measure of Italy's difficulties is revealed by the statistics of her foreign trade, which give the following picture:

<i>Year.</i>	<i>Italy's Imports.</i>	<i>Italy's Exports.</i>	<i>Excess of Imports over Exports.</i>
	<i>Lire.</i>	<i>Lire.</i>	<i>Lire.</i>
1895 ..	1,187,000,000	1,038,000,000	149,000,000
1900 ..	1,700,000,000	1,338,000,000	362,000,000
1905 ..	2,016,000,000	1,705,000,000	311,000,000
1910 ..	3,246,000,000	2,080,000,000	1,166,000,000
1911 ..	3,389,000,000	2,204,000,000	1,185,000,000
1912 ..	3,702,000,000	2,397,000,000	1,305,000,000
1913 ..	3,646,000,000	2,512,000,000	1,134,000,000

Italy's foreign trade has two great characteristics. In the first place, it is quickly expanding. In the second place, it shows a considerable excess of imports over exports, and this unfavourable balance is continually and very rapidly increasing. Owing to the insufficiency of its agricultural soil and its mineral resources, etc., Italy is dependent upon foreign countries, not only for many raw materials, but also for a great deal of her food, especially wheat. Italy's economic position may briefly be summed up as follows: She buys from abroad vast quantities of indispensable food and of equally indispensable raw materials, such as coal, cotton, wool, iron, copper, etc., and she pays for these only in part with her exports, which consist very largely of luxuries. There remains a very considerable adverse balance to be settled, and she pays for the great and constantly growing excess of her imports, not, as does the United Kingdom, with the earnings of her shipping and the income derived from her foreign investments, both of which are insignificant, but with the labour of her emigrants. As she cannot export a sufficiency of goods, she is compelled to export men in order to be able to pay for her imports and to live. That is a wasteful and a very painful proceeding, which is bound to debilitate the nation.

As Italy imports necessities and exports chiefly luxuries,

she finds herself in an unfortunate and a very dangerous position. An analysis of Italy's exports shows that these consist principally of the following goods according to the order of their importance: silk and silk manufactures, cotton manufactures (largely luxuries), wine, dried figs, grapes, almonds, etc., cheese, olive oil, oranges, lemons, melons, tomatoes, etc., eggs, worked marble and alabaster, various manufactured luxuries, such as artistic furniture, glassware, lace, motor-cars, etc.

For decades the nations of the world will have to save in order to pay for the War, and will have to restrict the purchase of luxuries, and especially of foreign luxuries. Taxation will remain very high, and imported luxuries will naturally be singled out for particularly heavy taxation. Hence Italy's exports of silks, wines, oranges, figs, almonds, olive oil, artistic furniture, etc., will probably be crippled. Unfortunately, the Italians cannot turn from the production of luxuries to that of necessities. Wheat, beans, potatoes, etc., cannot be grown on the sweltering mountain terraces where vines, orange-trees, etc., flourish, nor can the Italian industries easily change from the production of artistic manufactures, which require the maximum of labour and the minimum of coal and of raw materials, to that of necessities which require the minimum of labour and the maximum of raw material.

One of the most important Italian resources consisted in the stream of wealthy foreign visitors who before the War left every year hundreds of millions of lire in the country. Among these visitors the Germans were by far the most numerous. Owing to the necessity of thrift, people will for years abstain from travelling abroad. They will take holidays in their own country. The Germans and Austrians will no doubt shun Italy.

The economic position of Italy was serious enough before the War; it may become still more serious after its con-

clusion. Italy's imports will presumably be vastly increased in price, for food and raw materials will remain dear for many years. At the same time her exports will probably be vastly reduced, for the world will for many years not be able to afford purchasing foreign luxuries. Consequently Italy's unfavourable trade balance which was serious enough before the War, may increase at a startling, an unprecedented and almost an unbelievable rate. It follows that Italy will be able to pay for the necessaries which she has to import only by means of a vastly increased export of her citizens to foreign States, unless she obtains substantial relief from some quarter or the other. Emigration from Italy, which was colossal before the War, and which beat all international records, may after the Peace assume gigantic and truly calamitous proportions.

In 1914 and 1915 many Italian statesmen, politicians and writers were averse from Italy taking part in the War because they recognised that, though exceedingly rich in genius, in energy and in men, she is exceedingly poor in natural resources of every kind by the exploitation of which men live. They recognised that the savings which the people had accumulated during decades by their exertions and by a superhuman economy would quickly be dissipated, that the national working capital would disappear, that the War might yield the possession of the Trentino and of Trieste, but might nevertheless be ruinous to the country. Herein lay the reason that many Italian patriots considered it a grave mistake for Italy to abandon her neutrality. Their views are perfectly understandable.

Every Italian knows, of course, that the Italian people are kept in poverty and that they are forced against their will to emigrate in large numbers because the country lacks land for the pursuit of agriculture, and lacks the

raw materials necessary for the energetic development of the manufacturing industries, especially coal and iron. The haunting thought and desire of all Italians has naturally been how to provide land and raw material, and particularly land, for the people. Hence many Italian patriots hoped to obtain by the War not only the liberation of the politically enslaved Italians in Austria-Hungary, which is a purely ideal aim, but they hoped that the War would at the same time bring economic freedom to the Italians in Italy, and enable them to make a living under the Italian flag. Therefore they desired that the War should yield to the Italian people the elbow-room and the natural resources which they urgently need, and as the Greek and Serbian territories are nearest at hand, they turned their eyes not unnaturally towards them, although they demanded the liberation of the Italians in Austria in the name of the principle of nationalities and of justice.

If we consider matters dispassionately, it appears that the victory of the Allies may grant ample compensation to all the great nations leagued against Germany, Italy alone excepted. Russia, if she can still be called an Ally, the United States, the British Empire and the United Kingdom dispose of such gigantic latent resources of every kind that their development may pay, and may more than pay, for the War within a few decades. The acquisition of Alsace-Lorraine will give to France huge deposits of potash and of mineral oil, and by far the largest iron deposits in Europe. The exploitation of these may cover France's War expenditure and more. If Germany should be made to pay adequate indemnities for the damage done by her armies, the smaller nations, which have suffered most, would naturally have the first call upon them. Italy, on the other hand, who has shown the greatest gallantry in throwing her sword into the scales

when the outlook was exceedingly threatening, might suffer greatly, for the economic value of the Trentino and of Trieste is only small.

The tables given in these pages show that the Italians who emigrate do not discriminate much between one country and the other, that they do not go in the greatest numbers to lands near by or to countries where the climate resembles that of Italy, but they go to any country where work and wages are plentiful. Thousands of Italians go every year as far as the United States, Brazil and Argentina merely in order to gather in the harvest and then return to their native land.

Many Italian patriots, seduced by the political and military advantages of propinquity, have advocated that Italy should endeavour to acquire territories inhabited by Greeks and Serbians, and that she should found colonies in North Africa, Asia Minor, etc. Their wishes have, of course, been supported enthusiastically by Germans desirous of making mischief and by pro-Germans working in Italy. I believe that those Italians who see their ideal in a Greater Italy situated about the Mediterranean Sea are pursuing a mirage. If Italy were given the whole of the Balkan Peninsula, all North Africa and all Asia Minor, her economic position might be no better than it is at present. The political ambitions of her idealists might perhaps be satisfied, but the country would still lack the two most essential things—land for her agriculturists and raw materials for her industries. Therefore her citizens would still migrate by the million to the two Americas and to those European countries where work is plentiful and wages are good, while the Mediterranean lands would make large claims upon the Italian bureaucracy and army and upon the tax-payers. They might prove a liability, not an asset. It is worth noting that in 1910 the number of Italians in North Africa was

as follows, according to the Italian Emigration Commission :

In Tunis	100,000
In Algiers	45,374
In Egypt	34,926
In Eritrea	2,800
Total	183,100

In the same year there were in America 4,445,056 Italians, and in extra-Italian Europe 900,562 Italians. After all, emigrants are attracted, not by ideal motives, but by the possibility of making a good living.

Italy requires elbow-room and raw materials. She requires the latter most urgently in the difficult period after the War. Her need of raw materials and of cheap oversea transport may comparatively easily be satisfied by arrangements with the Allies, who should furnish Italy for a number of years with coal, raw materials, etc., not on competitive, but on preferential terms. They should provide her, besides, with cheap capital for the development of the country and especially of electric power. However, more than this might, and I think should, be done for her. Her gallantry deserves an adequate and a full reward, and deeds are more valuable than the most graceful expression of gratitude. Hitherto territorial possessions have been the prize of successful violence. We have been told that the present War will close the age of conquest and open the era of justice. We have been told that the present War is being fought largely in order to demonstrate to Germany, and to other nations which may feel inclined to follow her example, that violence does not pay, but leads inevitably to punishment. If it is right that the vile actions of a nation should be visited with punishment at the hands of the other nations, it should logically follow that the good

actions of a nation should be suitably recompensed, that virtue should no longer be its own reward. I would therefore suggest, and I would emphatically state that I am alone responsible for the suggestion, which has not been inspired or advised by anyone, that at the end of the War Italy's Allies should richly endow that country for her bravery, her gallantry and her sufferings, and should guarantee her future greatness by endowing her out of their superabundance with the territories which she needs, with a colonial empire. The ideal in my mind is that after the conclusion of the War the Allied diplomats should settle with Italy and hand over to her as a free gift, not territories of little value which can easily be spared and which they might wish to get rid of, but that Italy should be given those territories which she most desires and which at the same time can be ceded to her. The United States and the British Empire can richly endow Italy with territories which will furnish that country with raw materials of every kind and with agricultural lands upon which in the course of years a Greater Italy may arise.

Millions of Italians live abroad and further millions may follow them. The great current of Italian emigrants could scarcely be directed to North Africa, supposing that all North Africa belonged to Italy, because the country lacks the necessary resources. Besides, there is a very large native population already in possession. If Italy should receive from the Allies rich and empty territories she may be able not only to direct the stream of her future emigrants to her new possessions, but her sons domiciled in the two Americas and elsewhere may in course of time go to Italy's possessions, where they can live among men of their own race and where there are no difficulties with a large native population.

There is, unfortunately, a considerable amount of

prejudice against Italian labour. British colonials and American labour leaders may object to the creation of Italian colonies in their neighbourhood. A great deal of the prejudice against Italian labour is due to ignorance. Many working-men believe that the Italians are a nation of shirkers; that Italians who leave their own country are mostly waiters, organ-grinders, hairdressers, ice-cream vendors, etc.; that they shun honest labour. Men who employ these arguments should be told that Italians have done the hardest and most exhaustive work everywhere; that they have constructed innumerable tunnels, railway cuttings, canals, etc.; that they have been the pioneers of civilisation on all continents. It is true that the Italians frequently work for less money than do the native workers, but they do this, not from a desire to underbid native labour, but from ignorance of the language and of the customs of the land where they work. Foreign contractors have found it to their advantage to arrange with Italian agents, with *padrones*, for the supply of Italian labour below current rates. In most cases, not the Italian workmen, but the native contractors are to blame for the lowness of the wages paid to the Italian workers.

The grant of a colonial empire to Italy would vastly benefit the Italian people and would bind them with bonds of affection to the Allies for decades and perhaps for all time. At the same time, the British and American colonists would no doubt also be greatly benefited by close contact with the Italian people. They can learn a great deal from the Italian workers of every class. Many industries at present monopolised by them will be learned by Englishmen and Americans. Wine may replace spirits and beer as a national drink in the countries near which they have settled. After all, it must not be forgotten that the Italians were not so very long ago the

foremost nation in the world, and that they temporarily declined when, in the middle of the sixteenth century, they fell under the domination, first of the Spanish and then of the Austrian Habsburgs, who oppressed and ruined the country.

Intellectually and artistically the Italians were foremost in the world until they fell under Habsburg rule. Columbus and Toscanelli, who inspired him; the Cabots, who are often believed to be Englishmen; Amerigo Vespucci and Marco Polo, were Italians, and so were Carpini, who explored Turkestan in 1245-1247, and Niccolo de' Conti, who first explored India. The Cape Verde Islands and the Senegal and Gambia were not discovered by Portuguese explorers in the time of Henry the Navigator, as is widely believed, but by an Italian, Cada Mosto, who conducted a Portuguese expedition exactly as Columbus conducted a Spanish expedition. Italy has furnished the world with some of the greatest scientists, such as Thomas of Aquino, Giordano Bruno, Leonardo da Vinci, Politian, Pico della Mirandola, Lorenzo Valla, Torricelli, etc. Modern electricity owes a great deal to the great Italians, from Volta and Galvani to Marconi. Among the greatest of the world's reformers were men like Arnaudo da Brescia, Marsiglio of Padua, Cola di Rienzo and Savonarola who inspired Luther and the great political reformers. Italian thinkers have mightily advanced philosophy, astronomy, the mathematical sciences, geography, municipal and international law, political economy, etc. Modern art is a gift of the Italians. Italy has given us Dante, Petrarcha, Boccaccio, Ariosto, Tasso, Cimabue, Giotto, Michel Angelo, Leonardo da Vinci, Raphael, Donatello, Correggio, Botticelli, Bramante and innumerable other masters. She is the mother of modern music. The scientists, thinkers and artists of modern Italy are worthy sons of their great

ancestors. Prosperity, Science and Art are apt to go hand in hand.¹ During the Cinquecento the Italians were foremost not only in all the sciences and all the arts, but in all the industries and in commerce as well. The great Italian towns were the wealthiest towns in the world. The creation of a Greater Italy,² as outlined in these pages, may bring about another awakening of Italian genius, another Cinquecento. If the ideas expressed in these pages should recommend themselves to the friends of Italy in England, France and the United States, the societies friendly to Italy domiciled in the three countries should take up the programme sketched in this chapter and urge its realisation upon the various Governments.

CHAPTER XIII

CAN GERMANY PAY AN INDEMNITY ?—HER NATURAL WEALTH*

BEFORE the outbreak of the present War most Englishmen looked at German economic conditions through strongly coloured party-political spectacles. Tariff Reformers loudly asserted that Germany was enormously wealthy owing to her tariff, while Free Traders equally stoutly maintained that Germany was wretchedly poor. In the summer of 1914, at a moment when the pre-war tension was greatest, a very distinguished Free Trader assured me that peace would "certainly" be maintained, that Germany's financial position was very unfavourable, that she suffered from chronic deficits, that her last loan had been a failure, that she could not afford to go to war. When I expressed doubt at the correctness of his views, he replied with indignation: "Of course, you are a Tariff Reformer!"

Four years of war, during which Germany has financed her impecunious allies and has spent untold millions among the neutral States, have proved even to the blindest that Germany, who was lamentably poor a few decades ago, who, in 1870, after her first victories over France, raised with difficulty a loan of a few million pounds at 10 per cent., only half of which was subscribed for, has suddenly become exceedingly wealthy. British party strife and party-political prejudice have shrunk into the

* From *The Fortnightly Review*, June, 1918.

background. Hence the moment seems favourable for making a brief and impartial inquiry into the nature and causes of the wealth of Germany. Such an investigation seems particularly timely, because it is frequently, but rather rashly, asserted, and very widely believed, that Germany will be ruined if she should lose the War, that no indemnity, and certainly no adequate indemnity, can be expected from her even if the Allies should gain a complete victory.

In a democracy such as Great Britain people are unfortunately apt to subordinate facts to their party-political or their personal views and aspirations. While convinced Tariff Reformers ascribe Germany's vast prosperity chiefly, if not exclusively, to Protection, enthusiastic Free Traders, who at last have reluctantly begun to admit Germany's wealth, ascribe it to the better education of the German people and to their industry and frugality. Opponents of amateur government believe that Germany's economic progress is due to government by experts, Socialists assert that State Socialism has enriched the country, while many advocates of inland transport reform see in Germany's excellent railways and canals the principal factor of her wonderful industrial development.

As a rule, great economic phenomena are due, not to a single cause, but to a number of causes. Expert government, an able, well-organised and conscientious administration, good railways and canals, a fiscal policy designed, not for vote-catching purposes, but for purely economic ends, and a good education, have all powerfully contributed in making Germany efficient and prosperous. However, wealth depends not merely on the exertions of men. Wealth is created by the exploitation of the resources of Nature by men. An industrious, ambitious, well-trained, well-governed and well-directed nation

cannot hope to accumulate great wealth unless it possesses great natural resources. Greenland would remain poor even if all the Eskimos were Carnegies and Edisons.

It is frequently asserted by those who are insufficiently acquainted with German affairs, and by those who wish to ascribe Germany's phenomenal economic success to some single cause, that Germany is naturally an exceedingly poor country; that she owes her vast wealth almost exclusively to the exertions of her people and to the ability of her rulers. In reality Germany is endowed with very great and exceedingly valuable natural resources. Among these the following are particularly important. Germany possesses—

- (1) By far the greatest mineral resources in Europe, especially coal, potash and iron ore;
- (2) A geographical configuration most favourable to the development of agriculture and industry;
- (3) An unrivalled system of natural waterways which opens up the country in all directions;
- (4) An invaluable strategical position in the centre of the Continent, which is as helpful for commercial conquest as for military aggression.

As the study of Germany's natural resources has hitherto been much neglected by those who have dealt with German affairs, and especially by the numerous writers who have ascribed Germany's success either to the qualities of the people and of their rulers or to her economic policy in the wider or the narrower sense, I intend to deal in these pages with Germany's natural resources in the first place.

The great characteristic of modern industrial production is that it is carried on by labour-saving machinery, whereby the productivity of a single worker can be increased a hundredfold and a thousandfold. A skilled smith can as easily use a hundred-ton steam-hammer as

a light sledge-hammer. A skilled weaver can as easily attend to twenty automatic power-looms which work with incredible rapidity as to a single sluggish hand-loom. Modern industry is based on the most lavish use of power for driving machinery. Machines are driven either by steam or by electricity. Electric power can be generated either from coal or from waterfalls. As there are comparatively few waterfalls in Germany, except in the extreme South, coal furnishes, and will continue to furnish, Germany, and most other European States as well, with the prime motive force, which, of course, may be converted into electric power. Not only the bulk of the industrial machinery, but the bulk of the machinery used in mines and on railways, steamships, etc., depends upon coal or upon coal-generated electricity. It is therefore clear that coal is the dominating and the determining factor in modern industry and in modern commerce and transport. All three require gigantic quantities of coal.

Germany has by far the greatest store of coal in Europe. Her relative position as an owner of coal may be seen from the following features, which are taken from the valuable Report, "Coal Resources of the World," which was placed before the International Geological Congress at Ottawa in 1913:

COAL RESOURCES OF EUROPE.

	<i>Tons.</i>
Germany	423,356,000,000
Great Britain and Ireland	189,535,000,000
Russia	60,106,000,000
Austria-Hungary	59,269,000,000
France	17,583,000,000
Belgium	11,000,000,000
Spain	8,768,000,000
Spitzbergen	8,750,000,000
Holland	4,402,000,000
Balkan States	996,000,000
Italy	243,000,000
Sweden, Denmark and Portugal	184,000,000
 Total	 784,192,000,000

It will be noticed that, within her frontiers of 1914, Germany possesses more than one-half of the coal of all Europe; that she has more than twice as much coal as the United Kingdom, more than three times as much coal as European Russia, more than twenty-four times as much coal as France; that she has more than twice as much coal as all the other States of the European Continent combined. Germany is supreme in Europe in the most important of all minerals. It need scarcely be explained that supremacy in coal, in power, is a tremendous advantage to a modern industrial and commercial State.

Germany's coal is an asset of truly gigantic value. At the very low average price of 10s. per ton at the pit's mouth—a price which is bound to increase greatly in course of time—her store of coal alone represents a capital of £211,678,000,000, a sum which is thirty times as large as England's estimated War expenditure up to March 31st, 1919, and about fourteen times as large as the National Wealth of the United Kingdom was supposed to be in 1913. In view of her colossal wealth in coal it is, of course, ridiculous to say, as many people do, that Germany is naturally a very poor country, and that she cannot pay a heavy indemnity in case she should be defeated.

The value of coal depends upon its quality and upon the position and the greater or lesser exploitability of the coalfields. Let us, therefore, study Germany's wealth in coal a little more closely.

Germany is particularly rich in bituminous coal, which yields an abundance of by-products such as gas, tar, pitch, oil, ammonia, explosives, dyes, drugs, etc., which in the aggregate are far more valuable than the coal from which they are obtained. Germany's coal-measures are on the whole easily exploitable. Her most important

coalfields are three: The Rhenish-Westphalian coalfield, situated on the River Ruhr about the town of Dortmund; the great Silesian coalfield, in the south-eastern corner of Silesia, close to the Austrian and Russian borders; the Saar coalfield, about the town of Saarbrücken, close to the frontier of Lorraine. An authoritative description of the principal German coalfields and a reliable estimate of Germany's wealth in coal were furnished to the International Geological Congress at Ottawa by leading German experts and were reprinted in the Report mentioned. I have extracted from that document the most important passages. The estimate of Germany's coal resources was drawn up with the greatest caution, and it erred, apparently very considerably, on the side of moderation, as coal estimates frequently do. The Report of the German experts stated:

According to general expert opinion, coal-mining is for decades not practicable in Germany at a greater depth than 1,500 metres. . . . The figures given in the following relate only to *the quantities of coal which are actually exploitable under present conditions*. Therefore, layers which measure less than 30 centimetres (12 inches) have been excluded. It should also be pointed out that *the store of lignite possessed by Germany is considerably larger than indicated by the figures given*. . . .

The relative importance of the Westphalian coalfield increases constantly the lower one goes. Down to the thousand-metre depth it contains only about one-third (30 to 32 per cent.) of Germany's coal. Between 1,500 metres and 2,000 metres it contains more than two-thirds, exactly 70 per cent., of Germany's coal. Altogether, down to a depth of 2,000 metres it contains a little more than one-half (from 50 to 52 per cent.) of Germany's coal.

While the relative importance of the Westphalian coalfield increases at depth, that of the Silesian coalfield diminishes the lower one goes. Down to 1,000 metres it contains about 60 per cent. of Germany's coal, but

down to 2,000 metres it contains only from 39·5 per cent. to 40 per cent. of the nation's fuel. . . .

The coalfield third in importance is that on the River Saar. Down to the depth of 1,000 metres it contains 7·87 per cent., and down to 2,000 metres 5·7 per cent., of Germany's coal.

The Report sums up Germany's coal resources as follows, according to the depth at which the mineral is found:

Down to 1,200 metres ..	194,537,000,000 tons	= 47·45 per cent.	
From 1,200 to 1,500 metres	77,447,000,000 tons	= 18·89	"
Total ..	271,984,000,000 tons	= 66·34	"
From 1,500 to 2,000 metres	137,982,000,000 tons	= 33·66	"
Grand Total ..	409,966,000,000 tons	= 100·00	"
Lignite ..	13,390,000,000 tons		
Total coal and lignite ..	423,356,000,000 tons		

The Rhenish-Westphalian coalfield is particularly interesting for two reasons: Firstly, because it is the largest, the most intensively exploited, and therefore the most important, German coalfield; secondly, because it is situated within easy reach of France and Belgium. The relative importance of the Rhenish-Westphalian coalfield as an active coal-producer may be seen from the following figures:

GERMAN COAL PRODUCTION IN 1910.

	<i>Tons.</i>
In the Rhenish-Westphalian district	89,318,949
In the South Silesian district ..	34,229,360
In the Saar district	13,638,881
In all other districts	13,885,926
Total	151,073,116

It will be noticed that in 1910 the Rhenish-Westphalian coalfield furnished 60 per cent. of Germany's coal output.

In addition, it provided 90 per cent. of Germany's coke (which is largely used for iron-smelting), 75 per cent. of Germany's coal-tar, 75 per cent. of Germany's benzol, and 85 per cent. of Germany's sulphate of ammonia, which is exceedingly valuable as a fertiliser and for chemical purposes.

The Rhenish-Westphalian coalfield has forty-six coal seams more than 12 inches thick and which in the aggregate are 57 metres thick. Altogether the field contains ninety-two seams, which in the aggregate are 79.6 metres thick.

The Rhenish-Westphalian coalfield is situated in and about the valley of the River Ruhr and lies at a right angle to the Rhine. The coal slopes in a north-westerly direction to a considerable distance. Coal occurs not only up to the German-Dutch frontier, but even beyond it, and is being mined in Holland. The coalfield may be divided into three zones: a zone in the south, where pits have been sunk into the coal; a zone farther north, which has been explored by means of bore-holes; and a third zone still farther north, up to the Dutch frontier, which has not yet been fully explored.

The fact that the Report of the German experts probably seriously understates the quantity of coal available may be seen from the following statement of theirs:

The result of the calculations of coal available has been made on a conservative basis. For loss of coal in mining 27 per cent. of the coal actually available has been deducted.

The Report continues:

We have in the Rhenish-Westphalian pit zone, which extends to 1,532 square kilometres, down to a depth of 1,500 metres, 31,900,000,000 tons of coal, and down to 2,000 metres, 37,500,000,000 tons. In the bore-hole

zone of 1,728 square kilometres we have 26,900,000,000 tons of coal to a depth of 1,500 metres, and 44,700,000,000 tons to a depth of 2,000 metres. Within the unopened zone of 2,910 square kilometres there are 17,600,000,000 tons down to 1,500 metres, and 61,600,000,000 tons down to 2,000 metres.

At the present rate of exploitation, which comes to be 100,000,000 tons per annum, the store of coal absolutely worth extracting situated within the pit zone would suffice for 319 years down to the depth of 1,500 metres, and for 375 years down to 2,000 metres. The coal absolutely worth extracting within the bore-hole zone would suffice for an additional 269 years down to 1,500 metres, and for 447 years down to 2,000 metres. The workable coal within the unopened zone would suffice for a further 176 years down to 1,500 metres, and for 616 years down to 2,000 metres. In all three zones combined, which together extend to 6,170 square kilometres, there are, down to the depth of 1,500 metres, 76,400,000,000 tons of coal absolutely worth extracting, which, at the present rate of exploitation, would suffice for 764 years, while the coal absolutely worth obtaining down to 2,000 metres would amount to 143,800,000,000 tons, and would suffice for 1,438 years.

The estimate given leaves out of account seams measuring less than 12 inches across. If these were included, the coal would suffice for 2,136 years at the present rate of exploitation. According to the Report quoted, the quantity of coal contained in the Rhenish-Westphalian field is classified as follows:

ACTUAL RESERVES.

<i>Seams more than 12 Inches thick.</i>	<i>Tons.</i>	<i>All Seams.</i>	<i>Tons.</i>
Up to 1,000 metres 22,708,000,000		32,336,000,000	
1,000-1,200 metres 5,306,000,000		7,145,000,000	
1,200-1,500 metres 5,808,000,000		8,063,000,000	
1,500-2,000 metres 5,628,000,000		8,800,000,000	
Total 39,450,000,000		56,344,000,000	

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PROBABLE RESERVES.

	<i>Seams more than 12 Inches thick.</i>		<i>All Seams.</i>
		<i>Tons.</i>	<i>Tons.</i>
Up to 1,000 metres	7,708,000,000	12,756,000,000
1,000–1,200 metres	8,745,000,000	13,322,000,000
1,200–1,500 metres	10,455,000,000	16,942,000,000
1,500–2,000 metres	17,788,000,000	25,701,000,000
Total	<hr/> 44,696,000,000	<hr/> 68,722,000,000

POSSIBLE RESERVES.

		<i>Tons.</i>	<i>Tons.</i>
1,200–1,500 metres ..	.. ..	17,600,000,000	26,500,000,000
1,500–2,000 metres ..	.. ..	44,000,000,000	62,000,000,000
Total ..	.. ..	<hr/>61,600,000,000	<hr/> 88,500,000,000
Grand Total ..	.. ..	145,746,000,000	213,566,000,000

I would draw attention to the fact that the Rhenish-Westphalian coalfield alone contains considerably more coal than the whole of the United Kingdom, and that the coal in that district represents a value of £106,783,000,000 at the low average price of 10s. per ton at the pit's mouth. That sum is seven times as large as the so-called national wealth of the United Kingdom in 1913.

We live in the age of iron. While coal is the principal source of power industrially applied, iron is the most important ingredient of industrial manufacture and of transport. Germany is exceedingly rich, not only in coal, but in iron ore as well. The wealth of a country in iron ore depends, of course, upon the quantity of metallic iron which is contained in the ore. Germany's relative position as an owner of iron ore, or rather of metallic iron, may be seen from the following figures, which are taken from the Report, "Iron-Ore Resources

of the World," which was placed before the International Geological Congress at Stockholm in 1910:

RESOURCES OF METALLIC IRON CONTAINED IN IRON ORE.

Iron Reserves of Europe.

			<i>Actual Resources.</i>	<i>Potential Reserves.</i>
			<i>Tons.</i>	<i>Tons.</i>
Germany	..	..	1,270,000,000	Considerable.
France	..	..	1,140,000,000	Considerable.
Sweden	..	..	740,000,000	105,000,000
United Kingdom	..		455,000,000	10,830,000,000
Russia	..	..	387,200,000	424,700,000
Spain	..	..	349,000,000	Considerable.
Norway	..	..	124,000,000	525,000,000
Austria	..	..	90,400,000	97,000,000
Luxemburg	..	..	90,000,000	?
Greece	..	..	45,000,000	?
Belgium	..	..	25,000,000	?
Hungary	..	..	13,100,000	34,100,000
Italy	..	..	3,300,000	1,000,000
Finland	..	..	?	16,000,000
Bosnia and Herzego-				
vina	..	..	?	11,300,000
Bulgaria	..	..	?	700,000
Switzerland	..	..	800,000	800,000
Portugal	..	..	?	39,000,000
Total	..	..	4,732,800,000	12,084,600,000

It will be noticed that, as far as actual reserves are concerned—it would be rash to treat potential reserves as if they were actually available—Germany is the largest owner of iron ore in Europe, that she possesses within her frontiers of 1914 three times as much iron as the United Kingdom.

Germany has a number of iron-ore fields. These contain, according to information placed by eminent German experts before the Stockholm Congress, the following quantities of ore:

	<i>Available in the First Place.</i>	<i>Available in the Second Place.</i>	<i>Probable Reserves.</i>
Lahn and Dill district	Tons. 166,000,000	Tons. 92,250,000	Considerable
Kellerwald-Sauer-land	4,000,000	—	Moderate
Siegerland	100,300,000	15,400,000	Moderate
Other Rhenish mountains	8,100,000	11,500,000	Moderate
Bentheim-Otten-stein	—	15,000,000	Considerable
Teutoburger Wald	20,500,000	23,500,000	Moderate
Ilseide and Salz-gitter	248,000,000	30,000,000	Very Considerable
Harz Mountains	20,500,000	24,500,000	Moderate
Thuringia	51,900,000	52,300,000	Considerable
Minette of North-West Germany	20,001,000	25,000,000	Considerable
Lower Hesse	600,000	1,000,000	Moderate
Spessart Moun-tains	3,500,000	—	Moderate
Silesia	600,000	17,250,000	Moderate
North and Middle Germany	10,000,000	10,000,000	Moderate
Württemberg	10,000,000	100,000,000	Very Considerable
Baden	—	—	Considerable
Bavaria	31,000,000	150,000,000	Very Considerable
Hesse	15,000,000	—	Considerable
Lorraine-Luxem-burg	2,130,000,000	500,000,000	Very Considerable
Total	2,840,000,000	1,067,700,000	Very Considerable

As Luxemburg forms part of the German Customs Union, the Luxemburg ores have been included in the list. The Grand Duchy has about 300,000,000 tons of available iron ore.

The figures given show that in Lorraine-Luxemburg, close to the French frontier, are found three-fourths of those German iron ores which are described as "available in the first place," and one-half of those ores which are

described as "available in the second place." The eighteen other iron-ore fields enumerated possess individually only small quantities of ore, and I would particularly point out that whereas the Lorraine-Luxemburg district possesses the bulk of the ore available in the first place, the eighteen other districts excel in ores which are available only in the second place, which, in other words, are commercially of inferior value.

Germany possesses in round figures 4,000,000,000 tons of iron ore actually in sight. In addition to that vast quantity she has, according to the expert information supplied in the table, very considerable reserves, for which, however, accurate estimates cannot as yet be given. If we assume that Germany's iron ore is on an average worth 5s. per ton—which seems a reasonable figure, for its price is likely to increase—her store of iron ore actually in sight is worth about £1,000,000,000. It is therefore a considerable asset, although its value is small if compared with the truly gigantic sum represented by the value of Germany's coal. At the rate of 5s. per ton, the Lorraine-Luxemburg iron ore alone would be worth £750,000,000.

As the Lorraine-Luxemburg ores are more easily accessible and more valuable than the other German ores, it is only natural that the Lorraine orefields have become the principal source of Germany's domestic ore-supply. In 1910 Germany's gigantic iron industries used 38,526,454 tons of ore, which came from the following quarters:

IRON ORE USED IN GERMANY IN 1910.

Domestic Ore.

From Alsace-Lorraine ..	16,652,144 tons	
„ Luxemburg ..	6,263,391 ..	22,915,535 tons
„ All other districts ..		5,794,119 ..
		28,709,654 ..

<i>Imported Ore.</i>			
From Sweden	.	..	3,249,000 tons
,, Spain ..	.	..	2,861,200 ,,
,, France and Belgium	.	..	2,100,400 ,,
,, All other countries ..	.	..	1,606,200 ,,
			<hr/> 9,816,800 tons
Grand Total	.	..	38,526,454 ,,

Of the iron ore used in Germany in 1910, about 75 per cent. came from Germany and 25 per cent. was imported from abroad; while of Germany's domestic iron ore, about 80 per cent. came from the Lorraine-Luxemburg district and only about 20 per cent. from all the other German districts combined. In other words, the great German iron industry, the most powerful industry of the country, is dependent for its prosperity on imported iron ore, which is particularly rich in metallic iron, and on iron ore drawn from the Lorraine district, which is situated on the French frontier. It follows that the great German iron industry and the numerous industries dependent on it would be ruined if Germany should be deprived of the Lorraine-Luxemburg iron and the iron imported from abroad. That is a fact which the Allied diplomats and peoples will probably not overlook.

The Lorraine-Luxemburg ores have this peculiarity, that they are very rich in phosphorus. As phosphorus makes iron brittle, it has to be extracted from the ore. This is done by the Gilchrist-Thomas method in converters lined and partly filled with lime. The phosphorus in the ore unites with the lime and forms a scum, which, on rising to the top, is drawn off. It is allowed to cool and is then ground into a fine powder, which is called basic slag, and which is a manure of the very greatest value. Germany is not only self-supporting in this important fertiliser, but exports huge quantities of it, especially to Austria-Hungary, Russia and Italy.

Germany is exceedingly rich in mineral salts of every kind, and she has an absolute world monopoly in the particularly precious potash salts. The extent of her salt deposits is not yet exactly known. They are so vast that it is impossible to measure them and to calculate their contents. From year to year the known area of her subterranean deposits of salt and potash has been increasing. At first it was believed that these salts occurred only about Stassfurt and Halle, in the centre of Germany. However, potash has been found in vast quantities also in Thuringia, in the Grand Duchy of Saxony, in Hesse, in Hanover, in Mecklenburg, near Bremen and Hamburg, and in Alsace north of Mulhouse. It is believed by many that almost the whole of the North German plain and part of South Germany rest on salt deposits so gigantic that they almost defy measurement. Boreholes have been sunk through 6,000 feet of solid but soluble salts of all kinds without coming to the end, and nobody knows how much deeper one has to go to find their foundation.

Among the various kinds of mineral salts, soluble potash is at present the most valuable. I say "at present" because science may discover still more precious salts in that gigantic store. Soluble potash is of importance in chemistry and in many industries. Besides, it is one of the most valuable and the most necessary fertilisers known. The most important minerals required in the nurture of plants are three in number: nitrogen, phosphorus and potassium. Nitrogen is frequently supplied in the form of farmyard manure, which is rich in ammonia; phosphorus is given to plants in the shape of superphosphates, such as basic slag, in which Germany is particularly rich; and potassium is furnished in the shape of potash manure. Potash is extremely valuable for producing heavy crops of grain, roots, potatoes, tobacco,

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and grapes. All these flourish particularly in soil naturally rich in potash, such as that of the black earth district of Russia, or artificially enriched by potash. The *Encyclopædia Britannica* says on the subject in the article "Manures":

Potash appears to be bound up in a special way with the process of assimilation, for it has been clearly shown that whenever potash is deficient the formation of the carbohydrates, such as sugar, starch and cellulose, does not go on properly. Hellriegel and Wilfarth showed by experiment the dependence of starch formation on an adequate supply of potash. Cereal grains remained small and undeveloped when potash was withheld; because the formation of starch did not go on. The same effect has been strikingly shown in the Rothamsted experiments with mangels, a plot receiving potash salts as manure giving a crop of roots nearly two and a half times as heavy as that grown on a plot which had received no potash.

Germany's great agricultural prosperity and the progressive yield of her crops are largely due to her wealth in potash and in phosphoric iron ore, which furnish her with the most precious fertilisers. With regard to Germany's potash the *Encyclopædia Britannica* states:

Potash manures, with few exceptions, are natural products from the potash-mines of Stassfurt (Prussia). Until the discovery of these deposits in 1861 the use of potash as a fertilising constituent was very limited, being confined practically to the employment of wood ashes. At the present time a small quantity of potash salt—principally carbonate of potash—is obtained from sugar refineries and other manufacturing processes, but the great bulk of the potash supplied comes from the German mines. In these the different natural salts occur in different layers and in conjunction with layers of rock-salt, carbonate of lime and other minerals, from which they have to be separated.

Potash is much esteemed in agriculture, more especially

on light land (which is frequently deficient in it) and on peaty soils, and for use with root crops and potatoes in particular. For fruit and vegetable growing and for flowers potash manures are in constant request.

Potash is largely used in the industries, especially for making glass, glazing earthenware, iron-smelting and soap production, and for making explosives, soda, coal-tar dyes, chloride of potash, sulphate of potash, permanganate of potash, hydrochloric acid, oxalic acid, bromine, saltpetre, Glauber's salt, cyanide of potassium, chloride of lime, etc. The production of potash in Germany has increased as follows:—

<i>Year.</i>	<i>Tons.</i>	<i>Year.</i>	<i>Tons.</i>
1861	.. .. 2,293	1891	.. .. 1,370,013
1866	.. .. 143,000	1896	.. .. 1,782,673
1871	.. .. 300,747	1901	.. .. 3,484,865
1876	.. .. 586,196	1906	.. .. 5,129,439
1881	.. .. 943,963	1911	.. .. 9,606,900
1886	.. .. 1,041,545		

In 1913 Germany's exports of salts, and especially of potash, in all forms exceeded £10,000,000. The most important buyers of Germany's potash were the United States, Holland, England and Sweden. The United States employ vast quantities of German potash in their agriculture, especially for the cultivation of cotton and tobacco, and also for manuring vegetables, fruit-trees and meadow grass.

The quantity of salts and of potash possessed by Germany is unmeasurable and unestimable. In Germany it is frequently stated that the country can, at the present rate of consumption, supply the world with potash for at least five thousand years. Owing to over-production, the price of potash has been kept low, at about 10s. per ton. If we estimate that Germany possesses only 50,000,000,000 tons of easily accessible potash, it would, at the low price of 10s. per ton, represent a value of

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£25,000,000,000, a sum which is twice as large as the so-called national wealth of France. However, science may, and probably will, before long discover further use for the gigantic quantities of salts of which Germany has apparently a monopoly. Hence the value of Germany's store of salts is as unmeasurable as is its quantity, and its value may before long very greatly exceed the figure mentioned.

Providence has been very kind to Germany. It has endowed the Germans not only with vast and most valuable mineral resources, which have enabled them to create great and exceedingly prosperous manufacturing industries, but it has given them at the same time extremely favourable geographical conditions. The configuration of Germany is eminently favourable to the development of agriculture and of all the industries. Agriculture flourishes most on large, well-watered plains, while the manufacturing industries naturally arise in hilly districts rich in minerals and water-power, where men cannot make a living by agriculture alone. The prosperity of agriculture and of the manufacturing industries depends, of course, very largely on easy accessibility, on good communications, on cheap transport. The vast North German plain offers ideal conditions for agriculture and for the construction of roads and of railroads. Besides, Germany has an absolutely unique system of gently flowing, navigable rivers, which can easily be regulated and which pursue, at almost equal distance, a parallel course towards the North Sea and the Baltic. These rivers open up, not only all Germany, but also the countries beyond, to Germany's great advantage. The Rhine is the natural outlet of Switzerland, the Elbe that of Bohemia and of Northern Austria, and the Vistula that of Poland. Hamburg is the most important Austrian harbour and Danzig the most important Polish

harbour, while the Rhine is indispensable to Switzerland. These parallel-flowing rivers can, of course, be easily and cheaply connected, and have been connected, by canals running at a right angle to them through the plain. These open up Germany in the lateral direction. Lastly, the Rhine can easily be connected by a deep canal with the Danube. No other country possesses similarly favourable conditions for the development of inland transport by land, and especially by water.

A central position, the control of the inner lines, as strategists call it, is as valuable for commerce as it is for warfare. Being placed in the centre of the European Continent, Germany became centuries ago the meeting-place, the natural exchange and mart, of the Continental nations. From the earliest times the trade between Asia, Africa and Europe flowed along the Mediterranean, and went on either through Northern Italy, across the Alps, and then along the Rhine, or it went by way of Marseilles up the Rhone and then down the Rhine towards Bruges, Amsterdam, Rotterdam, Antwerp, England, and *vice versa*. The trade between the European East and West was carried on by the Danube on the one hand and by the Rhine, Elbe and Vistula on the other hand. Nuremberg, Augsburg, Strassburg, Ulm, Cologne, Prague, Vienna, Hamburg, Danzig, etc., became wealthy because they were the natural centres, emporia and outlets on the great Transcontinental trade routes which Nature had provided for the use of man.

A central position on a populous continent, such as that occupied by Germany, is exceedingly favourable, not only for the development of international commerce, but also for the rise of prosperous manufacturing industries. Nuremberg, Augsburg, Strassburg, Ulm, etc., became great manufacturing centres largely because of their central position. Their geographical position resembles

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that of Chicago, St. Louis, Winnipeg. Manufacturers naturally settle in localities which are particularly favourable for developing a trade in all directions. Geographically Germany is far more favourably situated for the industrial conquest of France, Austria-Hungary, Italy, Russia and her other neighbours than is England, through greater propinquity. France is cut off from Russia and Austria-Hungary by the bulk of Germany. Russia is cut off from the countries of the West by German territory.

The details given make it clear that Germany owes her vast wealth very largely to the possession of great and exceedingly valuable natural resources. Her wealth in the three minerals with which she is particularly abundantly supplied may be summarised as follows. Germany possesses—

423,356,000,000 tons of coal at 10s. per ton	= £211,678,000,000
4,000,000,000 " of iron ore at 5s. per ton	= 1,000,000,000
50,000,000,000 " of potash at 10s. per ton	= 25,000,000,000
Total	£237,678,000,000

The figures given indicate that Germany's natural riches are far greater than is believed by those who tell us that Germany's national wealth comes only to £15,000,000,000, that the country will be ruined if defeated, and that she cannot pay a War indemnity, and certainly not an adequate one, even if the Allies should gain a complete victory.

CHAPTER XIV

CAN GERMANY PAY AN INDEMNITY?—HER PRODUCTION AND TRADE*

IN the previous chapter I have shown that Germany owes her vast wealth very largely to the possession of very great and exceedingly valuable natural resources; that among the nations of Europe she is by far the richest in coal, iron ore and potash; that she has a geographical configuration most favourable to the development of agriculture and industry; that she possesses an unrivalled system of natural waterways which open up the country in all directions; that she occupies an invaluable strategical position in the centre of the Continent of Europe, a position which is as helpful for commercial conquest as for military aggression; that her coal, iron ore and potash alone are, at a very moderate valuation, worth £237,678,000,000, a sum which is about fifteen times as large as what is usually called the national wealth of the United Kingdom. Wealth is created by the exploitation of the resources of Nature by man. Let us now consider how the Germans have converted their natural resources into wealth and power. Such an investigation will yield some extremely valuable lessons to the practical statesman. Besides, the facts and figures which I shall furnish may help in answering the question whether Germany will be able or not be able to pay an adequate indemnity if the Allies should gain a complete victory.

During the last few decades, Germany, which not so

* From *The Fortnightly Review*, July, 1918.

very long ago was a poor and mainly agricultural country, has become an exceedingly wealthy industrial and commercial State, in which agriculture occupies a secondary place as a creator of wealth. Before the War Germany's wealth was probably as great as that of the United Kingdom, and the combined production of all her industries was very likely greater than that of all the British industries. While the United Kingdom was very superior to Germany in cotton manufacturing, shipbuilding and some other industries, Germany was very superior to Great Britain in the iron and steel industries, the chemical industries, the electrical industries, the glass industry and a number of others.

Formerly Great Britain pursued in matters economic a national policy which promoted production all round. Successive Governments fostered alike agriculture, the manufacturing industries and international trade. In 1846 England abandoned her national economic policy for a sectional one. She adopted the policy of *laissez faire*, of one-sided free imports, miscalled Free Trade, under the assumption that that policy was particularly favourable to the development of the manufacturing industries and of international trade, and allowed her agriculture to decline and to decay. English politicians and economists of the *laissez faire* school met the bitter complaints of agriculturists and others with the assertion that industry was more profitable than agriculture; that in a densely populated industrial and commercial European State there was no room for a prosperous agriculture.

Bismarck introduced in 1879 a policy of Protection which favoured simultaneously and equally agriculture and the manufacturing industries of Germany. It is generally known that the German manufacturing industries have mightily expanded during the last few decades; but it is not very widely known that the rural industries

also have rapidly advanced. The progress of a nation's rural industries can best be measured by their productiveness. Germany's agricultural production has increased as follows since 1880:

THE GERMAN HARVEST.

<i>Year.</i>	<i>Rye.</i>	<i>Wheat.</i>	<i>Oats.</i>
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1880	4,952,525	2,345,278	4,228,128
1890	5,868,078	2,830,921	4,913,544
1900	8,550,659	3,841,165	7,091,930
1910	10,511,160	3,861,479	7,900,376
1913	12,222,394	4,655,956	9,713,965

<i>Year.</i>	<i>Potatoes.</i>	<i>Sugar.</i>	<i>Hay.</i>
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1880	19,466,242	415,000	19,563,388
1890	23,320,983	1,261,000	18,859,888
1900	40,585,317	1,795,000	23,116,276
1910	43,468,395	1,947,580	28,250,115
1913	54,121,146	2,632,000	29,184,994

Between 1880 and 1913—1913 was a particularly bountiful harvest year—the production of the three principal German grain crops, rye, wheat and oats, considerably more than doubled, the production of potatoes nearly trebled and that of sugar grew sixfold, while the hay harvest increased by about 50 per cent. Before the War Germany produced about one-third of the world's potatoes. She was by far the largest potato-grower in the world. She raised about eight times as much as the whole of the United Kingdom. Only from one-third to one-fourth of her potatoes was used for human food.

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The bulk of her gigantic crop was employed either for feeding enormous numbers of cattle and pigs or for making spirit and starch and for other industrial purposes. It will be noticed that during the period under consideration Germany's agricultural production increased rapidly and continuously. The rapid and continuous increase in the produce of Germany's harvest was accompanied by a similar increase in Germany's meat production. Her live stock increased as follows during the years when animal censuses were taken:

LIVE STOCK OF GERMANY.

<i>Year.</i>	<i>Horses.</i>	<i>Cattle.</i>	<i>Sheep.</i>	<i>Pigs.</i>
1873 ..	3,352,231	15,776,702	24,999,406	7,124,088
1883 ..	3,522,525	15,786,764	19,189,715	9,206,195
1892 ..	3,836,256	13,555,694	13,589,612	12,174,288
1897 ..	4,038,495	18,490,772	10,866,772	14,274,557
1900 ..	4,184,099	19,001,106	9,672,143	16,758,436
1907 ..	4,337,263	20,589,856	7,681,072	22,080,008
1913 ..	4,523,059*	20,994,344	11,320,460	25,659,140

Between 1880 and 1913, when the British crops decreased to an alarming extent, the German crops fully doubled. Between 1883 and 1913, while British live stock increased only by about 10 per cent., German meat production fully doubled, for the number of cattle increased by one-third, while the number of pigs nearly trebled. Moreover, the increase in meat production was greater than appears from these figures, because breeds were greatly improved, so that the weight of the average animal was much greater in 1913 than it had been thirty years before. As sheep-rearing is impossible

* The figure relating to horses is for 1912, as horses were not enumerated in 1913.

if intensive agriculture is pursued, sheep, which yield comparatively little meat, were replaced by the more prolific and more valuable pigs.

The enormous increase in Germany's crops and Germany's live stock was caused, not by extending the agricultural area of the country, but by more intensive and more scientific cultivation. Since 1880 the yield per hectare—a hectare is roughly equal to $2\frac{1}{2}$ acres—increased as follows according to the official statistics:

AVERAGE YIELD PER HECTARE OF GROUND IN KILOGRAMMES.

<i>Year.</i>	<i>Rye.</i>	<i>Wheat.</i>	<i>Oats.</i>	<i>Barley.</i>	<i>Potatoes.</i>
1880 ..	840	1,290	1,130	1,320	7,100
1885 ..	1,000	1,360	1,150	1,300	9,600
1890 ..	1,010	1,440	1,260	1,370	8,000
1895 ..	1,120	1,450	1,300	1,430	10,440
1900 ..	1,440	1,870	1,720	1,800	12,600
1905 ..	1,560	1,920	1,570	1,790	14,600
1910 ..	1,700	1,990	1,840	1,850	13,200
1913 ..	1,910	2,360	2,190	2,220	15,860

Between 1880 and 1913—the latter year yielded exceptionally heavy crops—the produce per hectare, or per acre, practically doubled with regard to all the staple crops. In some cases the increase was a little less than double, in others it more than doubled. The increase in yield per hectare was continuous. That is surely a most remarkable record, and it was achieved obviously by improved cultivation, by the application of science to agriculture. The vast increase in the production of sugar also was largely due to improved methods of cultivation, whereby the percentage of sugar contained in the beets was considerably increased. The official figures make the following showing:

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<i>Year.</i>	<i>Production of Sugar in Germany.</i>	<i>Percentage of Raw Sugar Extracted from Beet.</i>
	<i>Tons.</i>	
1875-6	358,048	8.60
1880-1	573,030	9.94
1885-6	838,105	11.85
1890-1	1,336,221	12.54
1895-6	1,637,057	14.02
1900-1	1,979,000	14.93
1905-6	2,400,771	15.27
1910-11	2,589,869	16.45
1912-13	2,706,327	16.30

Although Germany's agricultural production doubled during the last few decades, her agricultural population either remained stationary or actually decreased. Whether it did the one or the other is not quite clear, because at the last Industrial Census, that of 1907, a different basis was adopted in enumerating the agricultural workers. Measured by the number of agricultural workers given in the only three Industrial Censuses which were taken in Germany, there would seem to be a considerable increase in agricultural labour employed. On the other hand, measured by the figures relating to persons employed, including their dependents, the number of agricultural workers would seem to have steadily and very considerably declined. The official figures which allow of these two irreconcilable interpretations are as follows:

<i>Year.</i>	<i>Persons Employed in Agriculture and Forestry.</i>	<i>Persons Employed in Agriculture and Forestry, in- cluding Dependents.</i>
1882	8,236,500	19,225,500
1895	8,292,700	18,501,300
1907	9,883,300	17,682,200

The official figures given make it doubtful whether the number of agricultural workers has increased or declined. They allow of either interpretation. Hence it will perhaps be best to assume that the number of agricultural workers has remained approximately stationary. It would follow that production per agricultural worker has doubled during the last few decades, and this doubling of agricultural production was obviously caused by the increased employment of powerful labour-saving machinery. The three Industrial Censuses of Germany indicate that machinery used in agriculture increased as follows during those years for which alone official statistics are available:

<i>Year.</i>	<i>Steam Ploughs.</i>	<i>Seed- Casting Machines.</i>	<i>Mowing Machines.</i>	<i>Steam- Threshing Machines.</i>	<i>Other Threshing Machines.</i>
1882 ..	836	63,842	19,634	75,690	298,367
1895 ..	1,696	169,465	35,084	259,364	596,869
1907 ..	2,995	290,039	331,325	438,837	947,003

During the twenty-five years from 1882 to 1907 the machinery employed in German agriculture has increased enormously. The number of steam-ploughs has increased three and a half-fold, that of seed-casters nearly fivefold, that of steam-threshing machines nearly sevenfold, and that of mowing machines nearly seventeenfold. Of course, the doubling of production per acre could not be achieved by using labour-saving machinery alone. The doubling of production could be brought about only by increasing the fertility of the soil. The Germans have applied science and organisation to their rural industries. Their chemists have analysed the soils, their biologists have studied the most scientific methods of feeding animals, etc., and the authorities have spread the information supplied by the scientists among the agriculturists,

and have organised the rural industries so as to eliminate all factors regarding their expansion. Of course, the productivity of the soil can be greatly increased only by the lavish use of the best manures, whereby a naturally poor soil can be converted into an extremely rich one. As I have explained in the preceding chapter, the two most important fertilisers, apart from nitrogen—stable manure, which contains ammonia is rich in nitrogen—are phosphorus and potassium. Phosphorus is contained in the basic slag which is yielded in large quantities by the iron ore of Lorraine, which is very rich in phosphorus; while potassium is provided for agricultural purposes by the enormous deposits of soluble potash of which Germany has apparently a monopoly. By the application of basic slag and of potash, and especially by using potash, the yield of grain, potatoes and root crops can be vastly increased. It cannot be doubted that Germany owes the prosperity of her rural industries not only to the application of science and organisation to agriculture, but also to the fact that Nature has endowed her with an abundance of the two most precious fertilisers—with superphosphates and potash. The prosperity of Germany's agriculture is therefore largely due to mineralogical and industrial causes.

While Germany's agricultural population has remained approximately stationary, that portion of her population which is engaged in industry and trade has rapidly increased, as the following figures show:

PERSONS EMPLOYED, INCLUDING THEIR DEPENDENTS.

<i>Year.</i>	<i>Agriculture and Forestry.</i>	<i>Per Cent.</i>	<i>Industry.</i>	<i>Per Cent.</i>	<i>Trade and Transport.</i>	<i>Per Cent.</i>
1882 ..	19,225,500	42.0	16,058,100	35.1	4,531,100	9.9
1895 ..	18,501,300	35.6	20,253,200	38.9	5,966,900	11.5
1907 ..	17,681,200	28.5	26,386,500	42.5	8,278,200	13.3

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While the population living by agriculture and forestry has apparently decreased by nearly 10 per cent., the population living by industry and by trade and transport has very greatly increased. The increase in employment in the various industries has been unequal. Some industries have advanced more quickly than others. By large groups the persons employed have increased as follows:

EMPLOYED IN GERMANY, EXCLUSIVE OF DEPENDENTS.

<i>Year.</i>	<i>In Mining.</i>	<i>In Metal-Working.</i>	<i>In the Machinery Trades.</i>	<i>In the Chemical Industries.</i>
1882 ..	430,134	459,713	356,089	71,777
1895 ..	536,289	639,755	582,672	115,231
1907 ..	860,903	937,020	1,120,282	172,441

<i>Year.</i>	<i>In the Textile Industries.</i>	<i>In the Building Trade.</i>	<i>In Trade and Commerce.</i>	<i>Total Industry and Commerce.</i>
1882 ..	910,089	533,511	838,392	7,340,789
1895 ..	993,257	1,045,516	1,332,993	10,269,269
1907 ..	1,088,280	1,563,594	2,063,634	14,435,922

During the period 1882 to 1907 the persons employed in industry and trade have doubled in number. The increase has been smallest in the case of the textile industries, for their workers have increased only by about 20 per cent. The number of workers engaged in mining and in metal-working has almost exactly doubled. The number of hands employed in the chemical industry and in trade and commerce has grown two and a half-fold, while those engaged in the machinery trade and in building

operations have trebled. Employment has obviously expanded most strongly in the production of machinery and in the building trade. Then came the chemical industries and trade and commerce, and then mining and metal-working. The textile industry came last. However, it would be rash to conclude from the figures given that the progress in the textile industries of Germany has been slow, because production may be vastly increased without correspondingly increasing the number of workers by effecting great improvements in organisation, and especially in mechanical outfit. At all events, the figures given indicate a powerful expansion in employment, especially in the most modern industries, in which the greatest skill and scientific knowledge are required, and in building operations. The trebling of the number of workers engaged in building testifies to the rapid increase of Germany's wealth and spending power.

All modern manufacturing industries depend for their prosperity on the employment of labour-saving machinery driven either by steam or electricity. As Germany has little power derived from waterfalls, except in the extreme south of the country, the electric energy used in manufacturing is derived from steam, is based upon coal. Coal is the force which sets in motion nearly all the machinery used in Germany, and the machinery itself, both for manufacturing and for moving raw materials and manufactured goods to and fro by land and by water, is made principally of iron. Besides, the iron industry is the most important of German industries. It follows that one can measure the expansion of Germany's industrial production from the expansion of her production of coal and of iron. Progress is a term of comparison. We can realise the progress made by a nation only by comparing it with the progress effected by another nation which is similarly situated. Let us, therefore, compare

the expansion of the production of coal and iron in Germany and in the United Kingdom:

Year.	PRODUCTION OF COAL IN—		PRODUCTION OF IRON IN—	
	Germany.	United Kingdom.	Germany.	United Kingdom.
1880 ..	Tons. 59,120,000	Tons. 149,380,000	Tons. 2,729,000	Tons. 7,802,000
1885 ..	73,672,000	161,960,000	3,687,000	7,369,000
1890 ..	89,290,000	184,590,000	4,658,000	8,033,000
1895 ..	103,960,000	193,350,000	5,465,000	7,827,000
1900 ..	149,790,000	228,770,000	8,521,000	9,052,000
1905 ..	173,660,000	239,890,000	10,988,000	9,746,000
1910 ..	221,980,000	264,500,000	14,793,000	10,380,000
1913 ..	273,650,000	287,410,000	19,292,000	10,260,000

The figures given in the above table indicate that whereas England's industrial progress, as measured by the production of coal and iron, was slow, that of Germany was exceedingly rapid. Apparently Germany had before the War overtaken the United Kingdom as a manufacturing nation. In 1880 Great Britain produced two and a half times as much coal as Germany. Probably she exceeded Germany at that time in the productive capacity of her industries to a similar degree. Rapidly Germany caught up the United Kingdom as a producer of coal, and in 1913 she had drawn almost level with Great Britain. If we allow for the fact that the United Kingdom exports a far larger quantity of coal than Germany, and bear in mind that coal is used in private houses far more wastefully in the United Kingdom than in Germany, because of the prevalence of open stoves in the former country, it seems obvious that the German industries consumed in 1913 considerably more coal than the British industries. We may therefore say that

Germany's industrial coal consumption was greater than England's industrial coal consumption, and that Germany's industrial production was probably greater than England's industrial production.

In iron production also Germany advanced far more rapidly than the United Kingdom. In 1880 Great Britain produced nearly three times as much iron as Germany. Since then the position has been reversed. In 1913 Germany produced twice as much iron as the United Kingdom. Between 1880 and 1913 British iron production increased by 30 per cent., but German iron production grew by no less than 600 per cent., or twenty times as fast. Between 1880 and 1895 British iron production increased merely by 25,000 tons, while German iron production increased by 2,736,000 tons, or more than a hundred times as fast. Between 1900 and 1913 the iron production of the United Kingdom increased by 1,208,000 tons, while that of Germany increased by no less than 10,771,000 tons. The tremendous advance of Germany in the production of coal and iron makes it understandable why the number of workers employed in the German mining and metallurgical industries has vastly increased, as has been shown in the beginning of this chapter. Naturally, the production of other industries which consume coal and iron in large quantities has increased at a similarly rapid pace. Moreover, Germany has overtaken Great Britain not only in the production of iron and steel, but also in the production of many commodities made of iron and steel. Formerly England was the greatest producer and exporter of machinery in the world. Germany has apparently overtaken England in the production of machinery as well. In 1912 Germany's machinery exports, both gross and net, were larger than Great Britain's machinery exports.

The prosperity of the German iron and steel industry

and of all the numerous industries dependent upon it is due to a variety of causes. One of the principal causes consists in Germany's great wealth in coal and iron. Another exceedingly important cause consists in the excellence of Germany's inland transport system. While in the United Kingdom coal, iron and harbours lie in close proximity, Germany manufactures her iron and steel far inland, and her coal-beds are separated by very large distances from her iron-beds. The great iron-ore mines of Lorraine-Luxemburg are separated from the great coal-beds of the Rhenish-Westphalian district by the distance of more than 200 miles. The iron ore sent to the Rhenish-Westphalian district from French Lorraine, Spain and Sweden has, of course, to travel over still longer distances. Some decades ago English iron experts, who had examined German affairs, had declared that Germany could never develop a powerful iron industry, because the long distances separating coal and iron from one another mad the cost of bringing them together for smelting purposes prohibitive. The cost would indeed have been prohibitive if German inland freights were as scandalously high as are British inland freights. The exceedingly efficient State railways of Germany charge very low freights, and still lower freights than those charged by the railways prevail on Germany's inland waterways. As North Germany is a level plain, the German rivers follow a gentle course. They can easily be regulated, and can easily be connected by lateral canals. The excellence of the German inland transport system has therefore powerfully contributed to the prosperity of the German iron and steel industry and of the numerous industries which use iron and steel.

The modern industries have coal and iron for basis. Hence the industrial strength and progress of a nation can be measured by its production of coal and iron,

and especially by its consumption of coal and iron. However, as modern industries depend on engine power, the industrial progress of a nation may also be ascertained from the increase of the machinery used. As there are no Imperial engine statistics for Germany, I would show the development of the machinery used in Germany by the increase of engine power employed in Prussia. This has progressed as follows:

STATIONARY STEAM ENGINES IN PRUSSIA.

In 1878	..	..	887,780	horse powers
In 1885	..	..	1,221,884	„ „
In 1895	..	..	2,358,175	„ „
In 1905	..	..	4,684,948	„ „
In 1912	..	..	6,182,116	„ „

Between 1878 and 1912 Prussia's engine power has increased sevenfold. Her productive power should have increased more than sevenfold, because modern machinery economises power. The engine power of Germany is approximately 50 per cent. greater than that of Prussia. Unfortunately no comparison can be instituted between England and Germany with regard to the progress made in the use of labour-saving machinery, because statistics of the horse-powers used in manufacturing in England over a number of years do not exist.

Although, as shown in the beginning of this chapter, the number of workers employed in the German textile industries has increased only by 20 per cent. between 1882 and 1907, German textile production has increased far more rapidly than would appear from the small increase in the number of the textile workers. Professor Oppel, in his book on the German Textile Industries published in Leipzig in 1912, stated that Germany's consumption of the principal materials used in spinning and weaving had increased as follows:

GERMANY'S CONSUMPTION OF—

Year.	<i>Raw Cotton.</i>	<i>Raw Wool.</i>	<i>Raw Silk.</i>
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1875 ..	114,500	38,900	2,630
1882 ..	140,600	70,300	2,414
1895 ..	233,400	163,600	4,302
1910 ..	380,734	187,116	7,242

It is regrettable that Professor Oppel does not supply figures for the intervening years.

Measured by the consumption of raw materials, the production of cotton goods, woollen goods and silk goods approximately trebled between 1882 and 1910, and considerably more than trebled between 1875 and 1910. Germany is not only self-supporting in textiles, but on balance is an exporter of these goods. In 1875 she exported on balance textiles to the value of £6,860,000. That excess had grown by 1910 to £34,375,000, or had increased fivefold. The development of the German textile industries, both as suppliers to the home market and as exporters, is satisfactory, although, of course, England is ahead of Germany in the production of cotton goods, while Germany is far ahead of Great Britain in the production of silk goods.

The increase of the wealth of a modern nation depends in the first place upon production, and only in the second place upon trade. A nation can conceivably be wealthy with a vast production even if its trade is insignificant, but it is inconceivable that a nation should become prosperous by a large trade if it lacked production. A nation can grow wealthy by trade only if it monopolises trade; if the other nations are so backward and so ignorant of trade that it can make vast profits out of their ignorance

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Commerce may be an important creator of wealth, but in the modern world it is no longer of preponderant importance. Commerce may be internal or external, or both internal and external. Germany has vastly increased both her internal and her external trade. The rapid and gigantic expansion of Germany's inland trade may be gauged from the development of her railway traffic, which has grown as follows:

GOODS CARRIED BY RAILWAYS.

In 1880	..	..	165,000,000 tons.
In 1912	..	..	668,000,000 "
In 1880	..	..	13,487,000,000 ton-kilometres.
In 1912	..	..	66,921,000,000 " "

Between 1880 and 1912 the tonnage transported by the German railways has increased fourfold, while the ton-kilometres have increased fivefold. It is safe to assert that no similar progress has been realised by any other European nation.

The progress of Germany's inland commerce carried on by waterways has been still more remarkable than the increase of her railway traffic. The development of Germany's inland shipping trade may best be gauged from the following figures:

GERMANY'S INLAND SHIPPING.

Year.	No. of Ships.	Carrying Capacity.	
		Tons.	Tons.
1882	18,715	1,658,266
1887	20,390	2,100,705
1892	22,848	2,760,553
1897	22,564	3,370,447
1902	24,839	4,877,509
1907	26,235	5,914,020
1912	29,533	7,394,657

While the number of ships used in Germany's inland shipping has increased by only about 50 per cent., their carrying capacity has increased by nearly 400 per cent. In other words, the individual ships have grown bigger and bigger. Their efficiency has been vastly increased. Many marvel at the development of Germany's Merchant Marine, but the increase of her inland shipping is still more wonderful. In 1912 Germany's inland fleet was far larger than her huge Merchant Marine. Her Merchant Marine had in that year 3,023,725 tons net and 4,708,998 tons gross.

The progress of the external commerce of a nation can be measured either by its foreign trade or by its merchant marine. Let us see how both have developed in Germany. Germany has become a country which lives chiefly by its manufacturing industries. According to the economists of the *laissez-faire* school, a protective tariff cripples the industries of a nation and lames its export trade in manufactured goods. In view of these doctrines it is particularly interesting to study the development of Germany's exports of manufactured goods.

GERMANY'S EXPORTS OF DOMESTIC MANUFACTURES.

Year.				£
1880	..	..	..	83,500,000
1890	..	..	..	107,440,000
1900	..	..	..	149,100,000
1910	..	..	..	239,800,000
1913	..	..	..	319,800,000

Between 1880 and 1913 Germany's exports of manufactured goods have practically quadrupled. No similar showing can be made for the United Kingdom.

Germany's Merchant Marine has increased as follows since the creation of the Empire:

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Year.	Tons Net.
In 1871	982,355
In 1881	1,181,525
In 1891	1,433,413
In 1901	1,941,645
In 1911	2,903,578
In 1913	3,153,724

The increase of the German Merchant Marine has been exceedingly rapid. In a few decades it has obtained the second place among the mercantile fleets of the world.

Production is more important than commerce as a creator of wealth. The figures given in these pages show that German production in field, mine and factory has increased much faster than British production, notwithstanding, or probably because, the economic policy which she has pursued, of which Fiscal Protection is merely a part, and possibly a part of inferior importance.

During the last few decades Germany, which was formerly a poor agricultural State, has become an exceedingly wealthy industrial and commercial country. Wealth may be of two kinds. It may be real or conventional. The real wealth of a nation consists of fields, factories, machinery, towns, railways, canals, etc. The conventional wealth of a nation consists of paper securities, precious metals, bank deposits and the like. Of course, the real wealth of a nation is far more important than its conventional wealth. It is clear that Germany's national capital has increased enormously through the increase of her real wealth, through the vastly augmented productive power of her fields and factories, through the increase of her machinery, the enlargement and improvement of her towns, the vast additions made to railways, canals and other valuable undertakings. However, as men generally, though very erroneously, see wealth rather in conventional than in real values, let us briefly

glance at the development of Germany's paper wealth. Wealth, like poverty, is a term of comparison. We can, therefore, best measure the progress of the paper wealth of Germany by comparing it with the development of paper wealth in Great Britain. The deposits in the savings banks in the two countries have grown as follows:

<i>Year.</i>	<i>Savings Banks Deposits in Germany.</i>	<i>Savings Banks Deposits in Great Britain.</i>
	£	£
1880 ..	130,690,000	77,721,084
1890 ..	256,865,000	111,285,359
1900 ..	441,929,000	187,005,562
1910 ..	839,028,000	221,158,021
1913 ..	984,450,000	241,507,028

In 1880 the German savings banks deposits exceeded the British by only £53,000,000. In 1913 the German savings banks deposits exceeded the British by no less than £743,000,000. The increased prosperity of the German people can be measured not only by their improved conditions of life and by the colossal growth of the savings banks deposits, but also by the growth of the deposits in the ordinary banks, in the co-operative societies, building societies, etc., as well. In 1913 the deposits in the German co-operative societies, building societies, etc., were probably larger than those contained in the British savings banks.

The gigantic increase in Germany's wealth can also be measured by the increase in the amounts insured against fire. In large portions of Germany fire insurance is compulsory for all owners of property. The amounts insured in those districts in which compulsory insurance prevails have increased as follows:

COMPULSORY FIRE INSURANCE OF BUILDINGS ONLY.

<i>Year.</i>	<i>Berlin.</i>	<i>Hamburg.</i>	<i>Kingdom of Saxony.</i>	<i>All Districts Subject to Compulsory Insurance.</i>
	<i>M.</i>	<i>M.</i>	<i>M.</i>	<i>M.</i>
1868 ..	837,000,000	449,000,000	1,645,000,000	9,872,000,000
1888 ..	2,627,000,000	1,218,000,000	3,472,000,000	20,223,000,000
1906 ..	4,764,000,000	2,507,000,000	6,737,000,000	37,057,000,000

Unfortunately, the figures given are somewhat fragmentary. They are the only ones which I have been able to obtain. They have been extracted from the Financial White Books published by the German Government in 1908 in connection with the projected reform of the Imperial finances. The districts subject to compulsory insurance against fire contain three-eighths of the population of Germany. Measured by the value of buildings alone, the wealth of Germany has approximately doubled between 1868 and 1888, and has doubled once more, roughly speaking, between 1888 and 1906. That progress is truly remarkable.

Up to the outbreak of the War Germany's wealth had been growing at an extraordinarily rapid rate. In 1913 Herr Helfferich, who at that time was a director of the Deutsche Bank, and who during the War became the head of the German Imperial Treasury, estimated the wealth of the German people as follows in his book *Germany's Economic Progress and National Wealth*:

Buildings and other property insured against fire	£10,000,000,000
Land in the country and the towns	3,500,000,000
Mines	300,000,000
Ships, goods in transit and metallic currency ..	300,000,000
Public property, not insured against fire, including railways	1,500,000,000
Capital invested abroad	1,000,000,000
Total	£16,600,000,000

At the end of his book Herr Helfferich summed up Germany's financial position as follows:

The German national income amounts to £2,000,000,000 a year, as compared with an income of from £1,100,000,000 to £1,250,000,000, about the year 1895.

Of these £2,000,000,000, about one-sixth, or £350,000,000, is devoted to public purposes, and about £1,250,000,000 is spent by private individuals. From £400,000,000 to £425,000,000 are added annually to the national wealth by savings and investments, while the national property is in addition increased by about £100,000,000, owing to the rise in values. Thus, altogether £500,000,000 are added annually to the national wealth as compared with from £225,000,000 to £250,000,000 about the year 1898.

The national wealth of Germany amounts to-day to more than £15,000,000,000, while it amounted only to approximately £10,000,000,000 about the year 1895.

Before the War the wealth of Great Britain was supposed to amount to about £15,000,000,000, and the British national income was calculated to reach £2,000,000,000. It would therefore appear that Germany has in a few decades overtaken great Britain not only in industrial production, but also in accumulated wealth, and that her yearly income, which formerly was exceedingly small, equalled in 1913 that of the United Kingdom. Other German authorities have arrived at a similar conclusion, and some of them have endeavoured to forecast the future development of the wealth of Germany and of some other countries. For instance, Herr Steinmann-Bucher wrote in his book *350 Milliarden Deutsches Volksevermögen*:

Formerly we were told that the wealth of Germany amounted to £10,000,000,000, that of France to £10,000,000,000, and that of Great Britain to £12,500,000,000. To-day we may say that Germany's wealth comes to £17,500,000,000, France's wealth at most

to £12,500,000,000, and that of Great Britain to £16,000,000,000. In twenty years, in 1930, Germany will have a national wealth of £30,000,000,000, which should compare with a wealth of £15,000,000,000 in the case of France and of £21,000,000,000 in the case of Great Britain.

The facts and figures supplied in these pages show that Germany's production, her trade and her accumulated wealth have during the last few decades grown with extraordinary rapidity. According to the high authority of Herr Helfferich, Germany added before the War every year £500,000,000 to her accumulated wealth. That is a gigantic surplus. It would therefore appear that Germany should be able, if defeated, to pay a very large War indemnity in yearly instalments by pledging her surplus income for a considerable number of years. As the damage which Germany has done to her opponents must be estimated to amount to at least £50,000,000,000, she would have to devote her entire surplus to the payment of a War indemnity during one hundred years. That is scarcely a practicable proposition. Besides, we must doubt whether Germany's prosperity would survive a great military defeat. The defeat of the German armies might be accompanied by vast damage to German property in the frontier districts, and it might be followed by civil war within Germany, by the break-up of the German Empire, and by considerable territorial losses. The retrocession of Alsace-Lorraine to France would deprive Germany of the bulk of her iron ore, while the recreation of an independent Poland, in accordance with the principle of nationality, would deprive her of the enormous Silesian coalfield, which alone contains more coal than the whole of the United Kingdom.

The German people, if defeated, might conceivably have the ability to pay a very large, but scarcely an

adequate indemnity out of their yearly surplus, but would they also have the will to do it? It would be difficult to compel them to pay vast sums to the Allies for decades, for compulsion would involve the occupation of German frontier districts, harbours, coalfields, etc., by Allied garrisons for an indefinite number of years. Such an arrangement would mean a prolonged state of bondage enforced upon the German people by military means. Besides, if Germany were to pay for the damages done by her troops out of her yearly surplus, the Allies would have to re-establish Germany's prosperity. Otherwise they could obtain only little from the country. As Germany's industrial prosperity was largely created at the cost of the other Industrial States, the renewed increase of the wealth of Germany would involve considerable loss to the Allies, a loss which conceivably would be greater than the monetary indemnities which might perhaps be obtained from her. In other words, the Allies would have to hand over to Germany their markets and part of their industries in return for utterly insufficient monetary payments. They would scarcely be prepared to re-establish Germany's prosperity to the harm of their own industries. Very likely defeat will end the German Empire, and will bring Germany's vast prosperity also to an end. It seems clear that Germany cannot pay an adequate monetary indemnity if defeated.

While Germany will probably be unable to pay, after an ultimate defeat, an adequate indemnity in cash, she can easily do so in goods. Her mineral resources alone represent, as I have shown in the preceding chapter, a value of at least £237,678,000,000. By seizing the coal, iron and oil resources of their opponents, and by proclaiming that they would retain them as an indemnity, the Germans have created an important precedent which they may live to regret. The Germans have endeavoured

to deprive France and Russia of all coal and iron so as to make these countries militarily helpless and economically dependent upon Germany for all time. The Germans well understand the importance of coal and iron in the lives of nations. The coal and iron beds are Nature's power-house and Nature's arsenal. They provide nations with wealth and with weapons for war. A nation can more easily be disarmed by seizing its coal and iron fields than by dismantling its fortresses and seizing its ships and arms. Ships, arms and fortresses may be recreated, but coal and iron fields which have been lost cannot be replaced. The loss of these disarm nations for all time. Those considerations which have guided Germany's statesmen in their action towards their opponents, will no doubt influence the attitude of the statesmen of the Allied nations in case of a complete victory. The Allied statesmen will probably prefer actual guarantees for the maintenance of peace on the part of Germany to paper promises. It stands to reason that the longer the War will last, the greater the damage done by the German armies will be, the greater will be the compensation which the Allies will eventually have to claim. That consideration should be borne in mind by the German statesmen and business men and by the German nation as a whole.

CHAPTER XV

THE FUTURE AND THE NATURAL RESOURCES OF THE UNITED STATES

THE majority of English people are so much taken up with current national and local questions that they can give but little time to the consideration of the future. If they discuss the future, they rather discuss England's future relations with foreign countries and with the British Dominions and Colonies than those with the United States. They rather reflect upon the position and progress of France, Russia, Canada, India, Persia, China, than stop to think of the probable development of the greatest English Colony, the North American Republic.

What will be the future of the United States?

The future of a State depends upon its territory and its natural resources, and upon the character and policy of the people. Compared with the principal States of Europe, the United States are very sparsely populated, as will be seen from the following table:

	<i>Square Miles.</i>	<i>Inhabitants.</i>	<i>Inhabitants per Sq. Mile.</i>
United States without Alaska (1910) .. .	2,973,890	92,027,874	30·9
Russia in Europe (1910) .. .	1,909,519	134,000,000	61·0
Spain (1910) .. .	194,744	19,588,688	100·6
Hungary (1910) .. .	125,395	20,886,487	166·6
France (1911) .. .	207,075	39,601,509	191·2
Austria (1910) .. .	115,802	28,571,934	246·7
Germany (1910) .. .	208,770	64,925,993	311·0
Italy (1910) .. .	110,659	34,687,000	313·5
United Kingdom (1911) .. .	121,371	45,216,665	372·6

The continental United States—that is, the United States without Alaska and the other outlying possessions—are 50 per cent. larger than is European Russia. They are fifteen times as large as the German Empire, and twenty-five times as large as the United Kingdom. If the United States were to become merely as densely populated as European Russia, the growth of which is impeded by its extensive barren wastes and by the scarcity of railways and of roads, they would have room for 200,000,000 inhabitants. If they were to become as densely populated as Germany, which seems by no means impossible, they would have room for nearly 1,000,000,000 inhabitants. The bulk of the United States population lives in the north-eastern corner of the Republic, on, or near to, the Atlantic coast. According to the Census of 1910 the centre of population lies at Bloomington in Indiana, between the 86th and 87th degree of Western longitude, not far from, and slightly east of, Chicago. How densely the North-Eastern States of the Union are populated, if compared with some of the most fruitful, fertile and promising States in the South and West, will be seen from the following figures:

POPULATION PER SQUARE MILE IN 1910.

Massachusetts ..	..	418.8	Louisiana ..	..	36.5
New Jersey ..	..	337.7	Washington ..	..	17.1
Connecticut ..	..	231.3	Nebraska ..	..	15.5
New York ..	..	191.2	California ..	..	15.3
Pennsylvania ..	..	171.0	Texas ..	..	14.8
Maryland ..	..	130.3	Florida ..	..	13.7
Ohio ..	..	117.0	North Dakota ..	..	8.2
Delaware ..	..	103.0	South Dakota ..	..	7.6
Illinois ..	..	100.6	Oregon ..	..	7.0

Only the three States Massachusetts, New Jersey and Connecticut may be considered to be densely populated according to the European standard. As these three States have together an area of only 21,455 square miles, they comprise only about $\frac{1}{150}$ of the territory of the Re-

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public. Except for a few very small patches which are densely peopled, the United States are much underpopulated.

Knowledge of the past often enables one to make a forecast of the future. In the past the population of the United States has very rapidly increased. The rapidity of its growth may perhaps best be gauged by comparing the increase of the population in the United States with that of the United Kingdom by means of the Census figures. Such a comparison yields the following result:

POPULATION OF—

<i>The United Kingdom.</i>	<i>The United States (without Alaska and Outlying Possessions).</i>
1821 21,272,187	1820 9,638,453
1831 24,392,485	1830 12,860,702
1841 27,036,450	1840 17,036,353
1851 27,724,056	1850 23,191,876
1861 29,321,288	1860 31,443,321
1871 31,845,379	1870 38,558,371
1881 35,241,482	1880 50,155,783
1891 38,104,975	1890 62,947,714
1901 41,976,827	1900 75,994,575
1911 45,216,665	1910 91,972,266

In 1820-1821 the population of the United Kingdom was a little more than twice as large as that of the United States. In 1860-1861 the population of the two countries was approximately equal. In 1910-1911 the United States had more than twice as many inhabitants as the United Kingdom. In less than a century, the relative importance of the two countries has been completely reversed. While between 1821 and 1911 the population of the United Kingdom has a little more than doubled, that of the United States has grown more than tenfold. During the last decennial intercensus period the population of the United Kingdom has increased by 3,240,000, while that of the United States has grown by no less than 15,978,000.

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The population of the United States is increasing very fast through natural increase and through immigration, but the actual percentual increase has gradually, though somewhat irregularly, declined. If we wish to gauge the future development of the population of the United States, it is safest to assume that the rate of increase will continue slackening in the same somewhat erratic manner in which it has slackened hitherto. A table of the probable future increase of the American population based on this principle has been compiled by Mr. Henry Gannett, of the United States Geological Survey. It shows the following result:

<i>Year.</i>	<i>Population of the United States.</i>	<i>Increase between Decennial Periods.</i>	<i>Year.</i>	<i>Population of the United States.</i>	<i>Increase between Decennial Periods.</i>
		<i>Per Cent.</i>			<i>Per Cent.</i>
1790	3,929,214		1950	150,000,000	12
1800	5,308,483	35	1960	167,000,000	10
1810	7,239,881	36	1970	184,000,000	10
1820	9,638,453	33	1980	202,000,000	10
1830	12,866,020	33	1990	225,000,000	11
1840	17,069,453	33	2000	249,000,000	11
1850	23,191,876	36	2010	274,000,000	10
1860	31,443,321	36	2020	299,000,000	9
1870	38,558,371	23	2030	325,000,000	9
1880	50,155,783	30	2040	350,000,000	8
1890	62,947,714	25	2050	375,000,000	7
1900	75,994,575	21	2060	400,000,000	7
1910	91,972,266	21	2070	425,000,000	6
1920	104,000,000	16	2080	450,000,000	6
1930	119,000,000	14	2090	475,000,000	5
1940	134,000,000	13	2100	500,000,000	5

The table given in the foregoing contains an extremely cautious statement of the probable future increase of the American population. Between 1900 and 1910 the population of the United States increased by 21 per cent.

Assuming that in the course of the next five decades that increase declines to 16, 14, 13, 12, 10 per cent., that it remains approximately stationary during the six ensuing decades, and that the increase of population rapidly sinks during the nine following decades from 10 per cent. to only .5 per cent. per decade, we find that the population of the United States will come to 249,000,000 in the year 2000, and to 500,000,000 in the year 2100. Mr. Gannett's forecast is so cautious and conservative that it may very possibly be exceeded, for if the United States should become merely as densely peopled as European Russia is at present, they would have room for 200,000,000 people; if they should become as densely peopled as Spain, they should have room for 300,000,000; and if they should become as densely peopled as Germany or Italy, they should have room for 1,000,000,000 people. The United States are absurdly thinly peopled. California's climate resembles that of Italy, and it is 50 per cent. larger than is Italy. However, while Italy has a population of 34,687,000, California has only 2,377,549 inhabitants. Texas is 30 per cent. larger than the German Empire. However, while the German Empire had in 1910 64,925,993 subjects, Texas had in 1911 only 3,896,542 inhabitants.

There is evidently no inherent improbability in the assumption that the United States will have 250,000,000 inhabitants at a time when children now born have arrived at a ripe old age; that in the year 2000 the United States will have as many inhabitants as the United Kingdom, Germany, France, Austria-Hungary, Italy and Spain combined, and that by the year 2100 they will have a considerably larger population than the Chinese Empire. The United States have enough room for 500,000,000, and probably for 1,000,000,000 people. It is therefore conceivable that the American people may obtain the leadership of the Anglo-Saxon race and the rule of the

world. Carthage, a Phœnician colony, in course of time far outstripped the motherland and became the protectress of the Phœnician colonies throughout the world. Similarly, the United States may become the protectress of the Anglo-Saxon race throughout the world in succession to Great Britain. The time may come when New York will hold the place of London, when Washington will be the capital of all the Anglo-Saxon States and of the world. A hundred or two hundred years hence the American people may talk with the same feelings of amused wonder of the little military States of Western Europe of the twentieth century with which men now speak of the tiny city States of Ancient Greece and of the not much larger Italian town republics of the Middle Ages.

Whether the United States will become a State of 500,000,000 or of a 1,000,000,000 white people depends, of course, not only on the size of the American territory, which is ample, but also on its natural resources. The marvellous growth of the American Republic is largely due to immigration. The United States will continue to attract the emigrants from overcrowded Europe only if these can earn a good living. If the natural resources of the United States should prove insufficiently attractive, or if they should prematurely become exhausted by ruthless and wasteful exploitation, European emigrants will go to Canada, South Brazil, Argentina, Australia, New Zealand, South Africa, and elsewhere, and the Great Republic will not dominate the world by weight of numbers and by its supremacy in wealth and power.

The natural resources of the United States are enormous, and their vastness has been the principal attraction to European emigrants. The United States are singularly blessed with an excellent, healthful, bracing, and varied climate and an extremely fruitful soil. On both Oceans they have an abundance of excellent harbours.

The country possesses most bountiful mineral resources and colossal forests. It has enormous water-power which can be converted into electricity and which is sufficient to drive all the machinery in the land, and its vast territory is opened and made easily accessible to man by a unique chain of lakes and by a most wonderful system of rivers and streams. No less than 148 streams, with a total navigable length of 5,365 miles, wend their way towards the Atlantic; 1,606 miles of navigable waterways open the United States towards the Pacific; 315 miles of navigable rivers, and the vastest system of interconnected inland seas in the world, open the United States towards Canada; 5,212 miles of navigable rivers, exclusive of the Mississippi, are tributary to the Gulf of Mexico; while the Mississippi system comprises no less than 13,912 miles of navigable waterways. Altogether the United States had in 1910 26,410 miles of navigable rivers and streams. In the same year the United Kingdom had only 23,387 miles of railway. The length of the navigable waterways of the United States is approximately equal to the circumference of the globe.

The United States have attracted, and will continue attracting, millions of emigrants from the over-populated countries of the world—between 1820 and 1910 the United States have received 29,784,222 alien passengers and immigrants, and recently they received on an average about 800,000 immigrants per year—because the vast natural resources of the country yielded a good living to all comers. Among the nations of the world the United States are at present the largest producers of corn, wheat, cotton, tobacco, pigs, mules, fish, fruit, coal, iron, copper, zinc, lead, petroleum, natural gas, timber, etc. Providence has blessed the United States with abundance. As the enormous prosperity and the rapid progress of the country are due to the vastness of its natural resources, it is

obvious that their exhaustion would bring about its decline.

The greatness of the productive power of the United States can best be seen by comparison. By far the greatest British industry is the cotton trade. According to the British Census of Production, the yearly output of the British cotton trade came in 1907 to £132,000,000; while the output of the second largest industry, the coal trade, was officially valued at £119,554,000. The United States corn (maize) crop—corn is mostly used for stock feeding—is as a rule worth at least £300,000,000 per year; the production of animals yields, on an average, about £360,000,000 per year to the American farmers; the production of wheat and oats is worth about £210,000,000 per year; that of raw cotton and cotton seed about £160,000,000 per year; that of hay and forage about £160,000,000 per year; milk, butter and cheese are worth £150,000,000 per year; the production of coal is worth £200,000,000 per year; that of petroleum, £50,000,000 per year, etc.

The possession of raw materials enables a nation to control industry. The United States, producing the bulk of the world's cotton, can, for instance, should they choose to, dominate the cotton trade of the world. The extreme profitability of the possession of raw materials may be illustrated by a single example. The production of the American forests is valued at £40,000,000 per year, of which about £35,000,000 represent the value of timber. The timber is turned partly into manufactured articles and partly into paper. The manufactured articles made of wood are worth £150,000,000 per year, and the paper is worth £50,000,000 per year; while the production of the printing and publishing trade enhances the value of part of the paper produced to £150,000,000 per year.

While the rural industries of the United States yield, according to the American Census, £1,700,000,000 per annum, the production of British agriculture in all its branches came in 1909 only to £210,000,000, according to the British Census of Production. The value of the American maize crop alone is 50 per cent. larger than the value of the entire agricultural production of the United Kingdom.

Although the production of American agriculture is enormous, it has, as regards monetary value, been rapidly overtaken by the manufacturing industries, for these have progressed much faster. While the production of American agriculture was, according to the Census of 1910, worth £1,700,000,000, that of the manufacturing industries was then worth £4,135,000,000. There can be no doubt that the economic balance in the United States has been seriously disturbed; that agriculture has not kept pace with the industrial advance of the country. The United States have, possibly, not developed their agriculture as much as they might have done. Thus they have become a predominantly industrial State, and they have been, and are still to some extent, neglecting and destroying those natural resources which form the basis of their prosperity.

During many decades the natural resources of the United States were far in excess of the needs of the people. The immigrants from England found that in the United States wages in general were from two to three times as high as in Great Britain, and that the cost of the necessities of life—but not of the luxuries—was lower. But during the last two decades the inhabitants of the United States have drawn lavishly and extravagantly upon the resources of Nature. In pursuit of wealth they have crowded into the towns. They have recklessly wasted certain natural resources; and as agricultural develop-

ment has not kept pace with industrial expansion, life in the United States is no longer as easy and as cheap as it used to be. The following table shows at a glance the relative progress of agriculture and of the manufacturing industries in the United States:

PRODUCTION OF—

<i>Year.</i>	<i>Wheat.</i>	<i>Corn.</i>	<i>Cotton.</i>	<i>Cattle.</i>
1860 ..	173,104,924	838,772,740	3,849,469	25,616,019
1870 ..	235,884,700	1,094,255,000	4,352,317	25,484,100
1880 ..	498,549,868	1,717,434,543	6,605,750	33,258,000
1890 ..	399,262,000	1,489,970,000	8,652,597	52,801,907
1900 ..	522,229,505	2,105,102,516	10,245,602	43,902,414
1910 ..	635,121,000	2,886,260,000	11,965,962	69,080,000
1912 ..	730,267,000	3,124,746,000	14,076,430	57,959,000

<i>Year.</i>	<i>Coal.</i>	<i>Pig Iron.</i>	<i>Copper.</i>	<i>Population.</i>
	(<i>Long Tons.</i>)	(<i>Long Tons.</i>)	(<i>Long Tons.</i>)	
1860 ..	13,044,680	821,223	7,200	31,443,321
1870 ..	29,496,054	1,665,179	12,600	38,558,371
1880 ..	63,822,830	3,835,191	27,000	50,155,783
1890 ..	140,866,931	9,202,703	115,966	62,947,714
1900 ..	240,789,310	13,789,242	270,588	75,994,575
1910 ..	447,853,909	27,303,567	482,214	91,972,266
1912 ..	491,071,429	29,727,137	557,589	95,410,503

Since 1860 the population of the United States has trebled, and agricultural production has apparently increased at approximately the same ratio, but mineral and mining production have increased very much faster. During the years under consideration the production of coal and iron has increased nearly fortyfold and that of copper nearly eightyfold. These marvellous figures give some measure of America's industrial progress.

If we look a little more closely into the figures relating to agricultural production, we find that while the production of wheat, corn and cotton has increased from three to fourfold, the number of cattle has only a little more than doubled, and has therefore increased far more slowly than has the population. Between 1907 and 1912 the number of cattle has declined from 72,533,996 to 57,959,000. This explains the relative scarcity and expensiveness of meat in the United States and in the world, for America is a most important factor in the world's meat-supply, and shows that the recent scarcity and dearness of meat has not been caused by the American Beef Trusts, as has often been asserted.

The United States, which formerly were principally an agricultural country, have become in the course of a few decades by far the largest manufacturing country in the world. Not so long ago the productiveness of the farms and of the factories was about equally great in the United States, but now the factories predominate to a very marked extent. According to the Census of 1910 the production of the United States manufacturing industries was valued at \$20,672,051,870, while the production of the farms came only to \$8,498,311,413. Cobden prophesied: "Great Britain is, and always will remain, the workshop of the world." Now the United States are the world's greatest workshop. It is worth noting that the manufacturing output of the American industries, measured by value, is at least three times as great as is the manufacturing output of the British industries.

Until lately the United States were by far the greatest exporters of wheat, meat, dairy produce, etc., in the world, but now their surplus of food is rapidly shrinking. How rapidly it is diminishing will be seen from the following figures:

UNITED STATES EXPORTS OF--

Year.	All Bread-Stuffs.	Animals of All Kinds.	All Meat and Dairy Produce.
	<i>Dols.</i>	<i>Dols.</i>	<i>Dols.</i>
1902	213,392,061	44,871,684	199,861,378
1903	221,391,922	34,781,193	179,839,714
1904	149,339,106	47,977,875	176,027,586
1905	110,254,247	46,728,781	169,998,873
1906	187,457,844	49,139,568	210,890,065
1907	184,938,043	41,203,080	202,392,508
1908	215,584,345	34,101,289	192,802,708
1909	160,161,624	22,645,438	166,521,949
1910	133,579,611	17,447,735	130,632,783
1911	124,913,537	19,048,653	149,389,737
1912	123,979,715	15,447,987	156,260,876

The foregoing figures show a steady and continuous decline in the exports of foodstuffs if measured by value. As prices had considerably risen between 1902 and 1912, the decline would be still greater if measured by weight. The exports of live cattle, beef and butter have diminished in the most remarkable way. Between 1902 and 1912 the exports of cattle have shrunk from \$29,902,212 to \$8,870,075, those of beef have shrunk from \$29,045,056 to \$1,596,319, and those of butter have declined from \$16,002,169 to \$6,092,235. The United States have no longer a huge regular surplus of cattle, beef and butter, and before long they may not produce sufficient meat for their domestic requirements. The United States Beef Trust has for a long time been supplying the British market with Argentine and Australian meat, and has been shipping Argentine and Australian meat to the United States as well. Notwithstanding their enormous area and relatively small population, the United States are in danger of becoming dependent upon foreign nations, not only for part of their meat and dairy produce, of which

already a considerable and growing quantity is being imported, but for their vegetables, fruit and bread-corn as well. That is surely alarming when one bears in mind that the vast and fruitful territory of the United States should suffice to supply all the food required by 500,000,000 people.

American statesmen have observed the course of events with serious misgivings. They recognise that agriculture is not sufficiently productive in the United States, partly because the American people flock to the towns, and partly because the American farmers have exhausted part of the soil by a somewhat reckless exploitation. With similar recklessness the owners of the forests and of the mines have not only exploited, but devastated the natural resources within their reach, to the irremediable harm of the nation. Such developments are apt to take place in new countries, as may be seen by similar developments in the British Dominions.

The people of the United States have been grumbling at the ever-increasing cost of living. That increase, though often attributed to the Tariff and the Trusts, is no doubt principally due to the waste and the insufficient development of the country's natural resources. Patriotic and far-seeing Americans have begun to understand that the future greatness of their country depends on the preservation of its natural resources; that the time is past when the natural resources of the country could safely be left to unchecked and uncontrolled individuals. The American people have become aware of the fact that they must stop the reckless waste of their greatest national assets. They have begun to recognise that the preservation of their gigantic natural resources is perhaps the most important problem of the Republic; that the preservation of the natural resources is a national question which calls for the co-operation of all citizens, regardless of party.

Thus the great movement for conserving and wisely exploiting America's natural resources has arisen.

The conservation movement in the United States was created by scientific men. The first impetus was given to the movement by the rapid reduction of the American forests which began to alarm far-sighted men. In the early seventies of the last century it was recognised that the American forests would rapidly be destroyed unless their wasteful exploitation was discontinued. The American Association for the Advancement of Science presented, in 1873, a memorial for the protection of forests by the State. Other memorials followed, and a movement was set on foot which resulted in the creation of a Forestry Bureau in the Department of Agriculture, and in laws which led to the creation of the first national forest reserve in 1891.

President Roosevelt took a great interest in the conservation movement. He made numerous speeches on the subject, and on January 22, 1909, he sent out a most memorable message on the policy of conserving the national resources, which the historian of the future may possibly place side by side with the Declaration of Independence. While the Declaration of Independence solemnly affirms "the unalienable right of men to life, liberty and the pursuit of happiness," the Conservation Message affirms in equally solemn and impressive words the right of all Americans, born and yet unborn, to the undiminished possession of their great national heritage. Mr. Roosevelt stated:

. . . The conservation of our resources is the fundamental question before this nation, and our first and greatest task is to set our house in order and to begin to live within our means.

The first of all considerations is the permanent welfare of our people, and true moral welfare, the highest form

of welfare, cannot permanently exist, save on a firm and lasting foundation of material well-being.

It is high time to realise that our responsibility to the coming millions is like that of parents to their children, and that in wasting our resources we are wronging our descendants.

There are differences of opinion as to many public questions, but the American people stand nearly as a unit for waterway development and for forest protection.

The greatest questions before us are not partisan questions, but questions upon which men of all parties and all shades of opinion may be united for the common good.

The function of our Government is to ensure to all its citizens, now and hereafter, their rights to life, liberty and the pursuit of happiness. If we of this generation destroy the resources from which our children would otherwise derive their livelihood, we reduce the capacity of our land to support a population, and so either degrade the standard of living or deprive the coming generations of their right to life on this Continent.

The right of every man to live his own life, provide for his family, and endeavour, according to his ability, to secure for himself and for them a fair share of the good things of existence, should be subject to one limitation and to no other. The freedom of the individual should be limited only by the present and future rights, interests and needs of the other individuals who make up the community. We should do all in our power to develop and to protect individual liberty, individual initiative, but subject always to the need of preserving and promoting the general good. When necessary, the private right must yield, under due process of law and to a proper compensation, to the welfare of the commonwealth.

We are striving to hold in the public hands the remaining supply of unappropriated coal, for the protection and benefit of all the people.

The nation, its Government and its resources exist, first of all, for the American citizens. . . .

With similar solemn impressiveness a Conference of State Governors which was held from May 13 to May

15, 1908, and which was attended by the Governors of the individual States, the entire Cabinet, the Justices of the Supreme Court, the members of both Houses of Congress and by representatives of the great national organisations of the United States, placed on record the following declaration:

We, the Governors of the States and Territories of the United States of America, in conference assembled, do hereby declare the conviction that the great prosperity of our country rests upon the abundant resources of the land chosen by our forefathers for their homes, and where they laid the foundations of this great nation.

We look upon these resources as a heritage to be made use of in establishing and promoting the comfort, prosperity and happiness of the American people, but not to be wasted, deteriorated or needlessly destroyed.

We agree that our country's future is involved in this, that the great natural resources supply a material basis upon which our civilisation must continue to depend, and upon which the perpetuity of the nation itself rests.

We agree in the light of the facts brought to our knowledge, and from information received from sources which we cannot doubt, that this material basis is threatened with exhaustion. Even as each succeeding generation from the birth of the nation has performed its part in promoting the progress and development of the Republic, so do we in this generation recognise it as a high duty to perform our part, and this duty, in large degree, lies in the adoption of measures for the conservation of the natural wealth of the country. . . .

The conservation movement was thus impressively launched, and it was carried on not only by scientists and by the State Governors and other officials, but was enthusiastically endorsed by many of the ablest business men in the United States. The late Mr. James J. Hill, for instance, one of the leading railway magnates in the United States, and the leading railway man in the North-West, wrote in his book *Highways of Progress*,

published in 1910, which was very largely devoted to the policy of conserving America's natural resources, as follows:

The highest conception of a nation is that of a trustee for posterity. The savage is content with wresting from Nature the simple necessaries of life. But the modern idea of duty is conservation of the old and modelling of the new in order that posterity may have a fairer dwelling-place, and thus transmit the onward impulse. The ideal of the prudent, loving, careful head of every family is the true ideal for a nation of rational men.

These words form the opening sentences of Mr. Hill's remarkable book.

Upon Mr. Roosevelt's recommendation, a Joint Conservation Conference was held at Washington in December, 1908. It was attended by a large number of political leaders, delegates and the most eminent experts from all parts of the United States, and it issued a valuable Report in three volumes, which, in Mr. Roosevelt's words, contains "the first inventory of its natural resources ever made by any nation." From that Report we learn how the natural resources of the United States have been wasted in the past, and how they may be preserved and increased in the future. In its recommendations the formation of permanent Conservation Commissions in all the individual States was advocated, "to the end that each Commonwealth may be aided and guided in making the best use of those abundant resources with which it has been blessed," and nation-wide co-operation of all conservation agencies of the Union was demanded. Imitation is the sincerest form of flattery. It is worth noting that the Canadian Government has taken the greatest interest in the conservation movement in the United States, and that the Dominion has created a

national Conservation Commission and provincial Conservation Commissions of its own.

Hitherto the American farmers have only too frequently "mined for wheat." They have sown wheat year after year without endeavouring to maintain the fertility of the ground by manuring, rotation, etc. Cotton has often been grown in the same short-sighted and wasteful manner. Although great agricultural improvements have taken place through the activity of the excellent U.S. Department of Agriculture and the Departments of Agriculture of the individual States, in consequence of reckless farming the produce of the crops has gradually diminished in quantity and deteriorated in quality in some of the older States, and when the soil at last refused to yield the farmers have abandoned the ruined land to weeds and have commenced a similar process of agriculture, or, rather, of devastation, elsewhere. Thousands of abandoned farms may be found in all parts of the United States, and especially in the East. From the last four Decennial Censuses of the United States I have extracted the following significant figures:

ACREAGE OF IMPROVED LAND IN FARMS.

States.	1880.	1890.	1900.	1910.
	Acres.	Acres.	Acres.	Acres.
Maine	3,484,908	3,044,666	2,386,889	2,360,657
New Hampshire ..	2,308,112	1,727,387	1,076,879	929,185
Vermont	3,286,461	2,655,943	2,126,624	1,633,965
Massachusetts	2,128,311	1,657,024	1,292,132	1,164,501
Rhode Island	298,486	274,491	187,354	178,344
Connecticut	1,642,188	1,379,419	1,064,525	988,252
Total	13,148,466	10,738,930	8,134,403	7,254,904

In the six States enumerated the farming acreage has, in the course of thirty years, been reduced by 5,000,000

acres, or by almost 40 per cent. A similar reduction in the acreage of farms has taken place in the States of New York, New Jersey, Pennsylvania, Ohio, Iowa, Delaware, Maryland, Virginia and California.

Owing to the frequent disregard of rotation and the neglect of manuring, the American soil yields comparatively little. According to the Report of the Conservation Committee, American and European yields of wheat compare as follows:—

AVERAGE YIELD OF WHEAT PER ACRE, 1897-1906.

United Kingdom	..	..	32.2	bushels per acre.
Germany	..	..	28.0	" "
France	..	..	19.8	" "
Austria	..	..	17.8	" "
Hungary	..	..	17.6	" "
United States	..	..	13.8	" "

The virgin soil of the United States yields per acre only between one-half and one-third as much as is yielded by the inferior, but carefully cultivated, soil of Great Britain and Germany. It is obvious that the most careful and the most thrifty cultivation—which, of course, is difficult in a country where distances are great, land is abundant, and labour dear—would make unnecessary the abandonment of American farms, and would at the same time double and treble the productivity of the soil.

It is a well-known fact that waterless deserts reclaimed by irrigation and swamp lands reclaimed by drainage possess the greatest fertility. The United States have already more than 13,000,000 acres of irrigated land. The most prolific agricultural and fruit-growing districts in California and Utah were once waterless deserts. According to the Statistical Abstract of the United States, the Great Republic contains 74,541,700 acres of swamp lands and 44,375,300 acres of irrigable land in the arid region, or, together, 118,916,000 acres which

await reclamation. We can safely estimate that at least 70,000,000 acres of swamps and arid land can profitably be converted into farms, meadows, and orchards. As the total area of the United Kingdom is 77,721,256 acres, an area as large as the United Kingdom can apparently be reclaimed at comparatively trifling cost. In 1909 the United States had 44,262,592 acres under wheat and 32,043,838 acres under cotton. The United States can, by reclamation alone, double their wheat and cotton area, and they can double the output per acre by a more intensive cultivation. The Report of the Conservation Commission stated:

The area of land cultivated may possibly be doubled. In addition to the land awaiting the plough, 75,000,000 acres of swamp land can be reclaimed, 40,000,000 acres of desert land irrigated, and millions of acres of brush and wooded land cleared.

Proper management will double our average yield per acre. The United States can grow the farm products needed by a population more than three times as great as our country now contains.

The harvests of the United States are greatly diminished by the ravages of vermin, which destroy at least £200,000,000 worth of food per year. The United States Bureau of Entomology estimated that the annual damage by noxious insects to growing crops, fruit-trees, and to grain in storage is no less than \$659,000,000, or £131,000,000, a sum equal in value to the entire yearly production of the greatest British industry, the cotton trade. The average yearly loss of animal products from flies, ticks and other insects is officially estimated at \$267,000,000, or £53,400,000, a sum larger than that which before the War Germany spent every year on her enormous army. This sum does not include the enormous loss of human life and the cost of disease due to house-flies, mosquitoes,

fleas and other germ-carrying insects, a loss much greater than that suffered by the live stock and its products. The Biological Survey of the Department of Agriculture estimated that the damage to live stock and crops by wolves, rats, mice, and other mammals averages over \$100,000,000, or £20,000,000 per year, a sum about as large as that which before the War was spent every year on the German Navy. • The destructive activity of vermin, which in many parts of the United States is extraordinarily great, can no doubt be diminished by appropriate co-operative action.

The forests of the United States have been exploited in the most improvident manner. Farmers usually begin operations by clearing the forest, by burning off the trees as if they were worthless; and as forest fires cannot always be controlled, they often destroy many miles of forest against their will. Mr. W. B. Greely, of the United States Forest Service, reported: "Of the total area of improved farms in 1907, not less than 65 per cent., or 290,000,000 acres (an area four times as large as the whole of the United Kingdom), have been drawn from the original forests of the country." Much timber has been wasted by forest fires caused by carelessness, and much has been destroyed by overtapping trees for turpentine, by the clumsy cutting and removal of trees, etc., and the result is that only one-third of the timber cut has actually been used, while two-thirds have been wasted. In forestry, as in agriculture, the United States have been drawing heavily on their capital. They have been using far more than they have restored to Nature owing to preventable waste, and the result of their wastefulness is that wood and timber, which used to be cheap and plentiful, have lately been scarce and dear. It is clear that by wise management the United States could greatly reduce the destruction of timber, and greatly

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increase its production to their great advantage. The Report of the Conservation Commission stated: -

... Since 1870 forest fires have destroyed a yearly average of fifty lives and \$50,000,000 worth of timber. Not less than 50,000,000 acres of forest is burned over yearly. The young growth destroyed by fire is worth far more than the merchantable timber burned.

One-fourth of the standing timber is lost in logging. The boxing of long-leaf pine for turpentine has destroyed one-fifth of the forests worked. The loss in the mill is from one-third to two-thirds of the timber sawed. The loss of mill product in seasoning and fitting for use is from one-seventh to one-fourth.

Of each 1,000 feet which stood in the forest, an average of only 320 feet of lumber is used.

We take from our forests each year, not counting the loss by fire, three and a half times their yearly growth. We take 40 cubic feet per acre for each 12 cubic feet grown; we take 260 feet per capita, while Germany used 37 and France 25 cubic feet.

We can practically stop forest fires at a cost yearly of one-fifth the value of the merchantable timber burned.

Under right management our forests will yield over four times as much as now.

Against an average yearly growth of 12 cubic feet per acre in the United States, the forests in Germany, all of which are rightly handled, yield each year 48 cubic feet per acre, and their most common trees do not grow naturally as fast as ours. It is certain that the average annual yield of forests in this country can be made, through protection from fire and through conservative logging, much larger than that of the forests in Germany.

Every owner of forest lands can stop fires and log conservatively with immediate profit, as well as with permanent profit.

Most other countries have already learned that the forests which are not conserved will be used up, and they are taking care of what they have. We are among the last to learn it. We can profit by that knowledge if we will. But if we will it means action, united, vigorous and prompt, by State and nation.

The warnings and recommendations of the Conservation Committee have borne fruit. By suitable legislation much of the waste of timber has been stopped. Forest planting is taking place in many parts of the Union, and by means of watch-towers with telephonic or wireless connection forest fires are now being rapidly detected and promptly stopped.

There are in the United States 26,410 miles of navigable water-ways. According to the Report of the Conservation Committee the length of navigable waterways can be doubled by regulating the streams. In the United States transport by river costs only about one-third as much as transport by railway. Yet, except in a few instances, the great rivers are devoid of traffic. Even the Mississippi, the greatest commercial waterway in the world, is scarcely used for transportation. The waterways of the United States have remained practically unutilised, partly owing to the lack of planful land and river regulation, partly owing to the hostility of the railways, which, like the British railways, have endeavoured to monopolise the carrying trade. The American rivers are a great natural resource which at present is largely wasted.

In consequence of the destruction of necessary forests and of the absence of river regulation, a large part of the most fruitful soil of the United States is washed into the streams and carried by them into the ocean. The Conservation Commission Report stated:

The direct yearly damage of floods since 1900 has increased steadily from \$45,000,000 to over \$238,000,000. The indirect loss through depreciation of property is great, while a large loss arises in impeded traffic through navigation and terminal transfers.

The freshets are attended by destructive soil erosion. The soil matter annually carried into lower rivers and harbours, or into the sea, is computed at 783,000,000

tons. Soil wash reduces by 10 or 20 per cent. the productivity of upland farms, and increases channel-cutting and bar-building in the rivers.

Hitherto river regulation and correction has often been effected rather for party-political than for national and economic purposes. Hundreds of millions have been wasted on purely political river jobs.

The owners of mines, petroleum, natural gas and other minerals, also have, to a large extent, followed the policy of economic vandalism to the harm of posterity, but they will not much longer be allowed to waste and destroy resources which will be necessary to future generations. State and national legislation is insisting upon the prudent exploitation of the natural wealth.

The Americans are apt to treat their game and fish as they treat their agricultural soil and their forests. They have an inclination not to utilise their enormous resources of game and fish, but to exhaust them completely. In this direction also the policy of conservation has proved highly beneficial.

The majority of American houses are built of wood, and their roofs are made of wooden "shingles." Fires are frequent in the United States, for the people are naturally careless and insurance is general. The Report of the Conservation Committee stated:

A notable fact in the analysis of fire losses is that 27 per cent. were caused through the fire extending beyond the building in which it originated. The extension of fires results from the use of inflammable material in construction. It is even more notable that only \$68,000,000 of the loss was on brick, concrete, stone and other slow-burning construction, while over double that amount, or about \$148,000,000, was on wooden-frame buildings. In the last thirty-three years the total fire waste amounted in value of property destroyed to over \$4,500,000,000.

According to the United States Insurance Year-Book, the fire losses come on an average to \$200,000,000, or to £40,000,000, per year. The United States waste every year on preventable fires as much as, before the War, Great Britain spent on her Navy, and during the last thirty-five years she has lost by preventable fires property valued at £900,000,000. Here also improvement is gradually being brought about by the teachings of the Conservation Commissions, which have powerfully influenced public opinion.

In the past the American people have exploited their natural resources without a thought for the morrow. They believed that their natural resources were not merely the largest in the world, but that they were practically inexhaustible. However, they have become painfully aware, through a rise in the price of American food, and of the raw materials of their own production, that their great natural resources are rapidly diminishing. Hence they have, with their customary energy, created a movement for husbanding and developing their natural resources, and for restraining the individuals in possession from destroying for their personal profit resources which should be a common heritage for all time. Americans are, above all, practical men possessed of an open mind. Without inquiring too closely whether their action is individualistic or socialistic, whether it meets with the approval or disapproval of political philosophers, political economists, and other doctrinaires who do not matter, they have unceremoniously thrown overboard their old policy of *laissez faire* in these matters, and have introduced the German policy of economic supervision and control by the State, and the policy of State management and State ownership. In future the United States will look rather after the benefit of the people as a whole, and especially after the welfare of the "home-makers,"

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in the name of patriotism, than after the advantage of enterprising capitalists and speculators in the name of economic orthodoxy and of unrestrained individualism, which often is merely a misnomer for unrestrained mammonism. "The Conservation Commission has formulated its land policy as follows:

Good business sense demands that a definite land policy be formulated. The National Conservation Commission believes that the following will serve as a basis therefor:

1. Every part of the public lands should be devoted to the use which will best subserve the interests of the whole people.
2. The classification of all public lands is necessary for their administration in the interests of the people.
3. The timber, the minerals, and the surface of the public lands should be disposed of separately.
4. Public lands more valuable for conserving water-supply, timber and natural beauties or wonders than for agriculture should be held for the use of the people from all except mineral entry.
5. Title to the surface of the remaining non-mineral public lands should be granted only to actual home-makers.
6. Pending the transfer of title to the remaining public lands, they should be administered by the Government, and their use should be allowed in a way to prevent, or control, waste and monopoly.

The Conservation movement in the United States should be of the greatest interest and of the greatest value to the British nation. It should furnish it with an invaluable precedent. The British people have in their Dominions and Colonies by far the greatest estate in the world. The natural resources of the British Empire are infinitely greater than those of the United States. National power is based upon national wealth. Production, wealth, population, economic policy, will decide

whether the United States or the British Empire will become the leading Anglo-Saxon Power. In the name of non-interference, individualism and *laissez faire*, Great Britain, and the other British States as well, have wasted a large part of their natural resources. The British people have allowed the forests of the United Kingdom and part of its agriculture to be destroyed, to the harm of the many and the profit of the few. The rural industries of England might produce three times as much food as they do produce. The erosion of the coasts of the British Isles continues unchecked, swamps are not drained, wastes are not reafforested, the canal system is not recreated, and coal is exploited without a thought of the future, although the time will come when Great Britain will be as poor in coal as she now is in timber. Great Britain is destroying her natural resources, although there will come a day of reckoning.

The future of the United States and of the British Empire depends upon the wise utilisation and the preservation of the natural resources. The future of the Anglo-Saxon race depends to a large extent upon its economic policy in the widest sense of the word. An inventory of the resources of the British Empire and an Imperial Conservation movement is required. The conservation of the Imperial natural resources is well worthy a special Imperial Conference. The undiminished possession of the vast natural resources of the British Empire must be safeguarded to future generations of the Anglo-Saxon race.

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